

5.17 Water Resources

This section addresses the potential impacts of the Blythe Solar Power Project (BSPP or Project) on surface and groundwater water resources. The section provides a narrative of applicable laws, ordinances, regulations and standards (LORS) and discusses their applicability to the Project, describes existing conditions with respect to surface and groundwater resources, and evaluates potential Project impacts to these resources.

The water resources evaluation presented in the following pages is intended to support compliance both by the California Energy Commission (CEC) with the requirements of the California Environmental Quality Act (CEQA), and by the Bureau of Land Management (BLM) with the requirements of the National Environmental Policy Act (NEPA). The two agencies are conducting a joint review of the Project and a combined CEQA/NEPA document will be prepared.

Summary

The BSPP would not have significant impacts on groundwater or surface water resources. The Project is a dry-cooled facility that will use approximately 600 acre-feet per year (afy) of groundwater from two onsite wells for all operation activities. For perspective, this is equivalent to the annual water use of the neighboring municipal golf course. The BSPP will use approximately 540 afy of groundwater over the 69-month construction period (~3,100 af total), also obtained from onsite wells. The Project will recycle the process makeup water to offset about 25 percent of annual operational consumptive use.

As discussed in Section 4.0, Alternatives, there is no feasible water supply option other than groundwater. The Project site is located in the Palo Verde Mesa Groundwater Basin (Basin). Groundwater in the area is contained within alluvial sediments in the Basin, which is part of the Colorado River Hydrologic Region. According to a 1975 Department of Water Resources (DWR) estimate, the total storage capacity in the Basin is 6,840,000 acre-feet (af). A 1979 DWR reconnaissance study on sources of power plant cooling water in the southern California desert estimated that half of the usable storage in the basin (5,000,000 af) was in the area of McCoy Wash north-northeast of the BSPP. The proposed annual use of 600 af is a very small fraction of this storage capacity and would not put the basin into overdraft or cause a significant drawdown in the regional water table. Water level data indicate that the water level in the Basin has generally remained stable in recent years because of from the Colorado River.

Numerical groundwater modeling of the proposed construction and operational water use revealed that the Project would not produce drawdown greater than five feet in adjacent water supply wells. As such, operational supply would not significantly impact offsite water supply wells within a one-mile radius of the site.

No significant impacts related to drainage, water quality or storm water runoff are expected. Impacts to a number of onsite ephemeral washes within the Project site will be mitigated by rerouting the washes in new channels around and through the facility. The new channels will be revegetated with native vegetation and will be designed to be wildlife friendly, and so that drainage downstream of the site approximates pre-existing conditions as close as practicable. A Storm Water Pollution Prevention Plan (SWPPP) and a CEC-mandated Drainage, Erosion, and Sediment Control Plan (DESCP) both of which contain Best Management Practices (BMPs), will be implemented to avoid significant drainage/stormwater runoff and water quality impacts during Project construction and operation.

The section discusses both potential water supply and water quality issues during Project construction and operation. More specifically, the section focuses on:

- Project water use and existing groundwater basin conditions and surface hydrology;
- Sources of groundwater to meet the dry-cooled Project's modest water needs;
- Project design to effectively manage storm water drainage across the 5,950-acre facility;
- Impacts associated with proposed groundwater use and with the diversion of a number of ephemeral washes through and around the Project;
- Identification of potential mitigation measures to offset proposed groundwater usage.

Appendix J contains the data used for the groundwater study gathered from various public and private sources. The appendix provides the results of a numerical groundwater model to assess potential groundwater pumping impacts, as well as a conceptual engineering report on Project Water/Wastewater requirements and system design. The hydrologic study and conceptual engineering report for surface water channel diversion and a preliminary construction SWPPP/DESCP are provided in Appendix L.

5.17.1 LORS Compliance

Applicable Federal, State, and local LORS are summarized in Table 5.17-1 and discussed in text following the table. Non-applicable Federal and State LORS are also discussed to explain why they are not applicable.

Table 5.17-1 Summary of Applicable Water Resources LORS

LORS	Applicability	Where Discussed in AFC
<i>Federal</i>		
Clean Water Act (CWA): 33 United States Code (USC) Section 1251 et seq.	<p>The CWA regulates both direct and indirect discharges, including storm water discharges from construction and industrial activities.</p> <p>The CWA establishes protection of navigable waters of the U.S. and states through Section 401, which requires that impacts to these waters (including ephemeral drainages and washes) to be quantified and mitigated. Waters of the U.S. also are protected through Section 402 which regulates wastewater and storm water discharges through the National Pollutant Discharge Elimination System (NPDES).</p> <p>Activities resulting in the dredging or filling of jurisdictional waters of the U.S. are regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA. A 401 certification is necessary for receipt of a 404 permit.</p>	Sections 5.17.1

Table 5.17-1 Summary of Applicable Water Resources LORS

LORS	Applicability	Where Discussed in AFC
Federal Land Policy Management Act (FLPMA) of 1976: 43 USC Section 1765 and implementing regulations. Title: 43 Code of Federal Regulations (CFR) Parts 2800 and 2920	Provides regulations for BLM to grant rights-of-way (ROWs) for use of public lands in a manner that: a) protects the natural resources associated with public and adjacent lands; b) prevents unnecessary or undue degradation; c) promotes the use considering engineering and technological compatibility, national security, and land use plans.	Section 5.17.1
Resource Conservation and Recovery Act (RCRA) of 1976: 42 USC Section 6901 et seq., and implementing regulations: Title 40 Code of Federal Regulations (CFR) Part 260	RCRA seeks to prevent surface and groundwater contamination, sets guidelines for determining hazardous wastes and identifies proper methods for handling and disposing of those wastes.	Sections 5.17.1 and 5.16, Waste Management
Colorado River – Proposed Accounting Surface Rule: 73 Federal Register 40, 916 (July 16, 2008) (under review in response to public comments)	The water under the Project site is classified as being within the “accounting surface” of the Colorado River, which means that extracted groundwater is replaced with water from the Colorado River. Under a proposal from the U.S. Bureau of Reclamation (USBR), entitlement to extract groundwater must be approved and an application submitted through the Colorado River Board of California.	Section 5.17.1.
State		
California Constitution, Article X, Section 2	Prohibits waste or unreasonable use of water, regulates use and of diversion of water, and requires conservation and reuse of water to the maximum extent possible.	Section 5.17.1
Federal CWA, implemented by the State of California - California Storm Water Permitting Program: California Construction Storm Water Program, California Industrial Storm Water Program	Construction activities that disturb equal to or greater than one acre are required to be covered under California’s General Construction Permit, which requires the development and implementation of a SWPPP. Industrial activities during operation with the potential to impact storm water discharges are required to be covered under a NPDES permit for those discharges.	Section 5.17.1
California Water Code Section 461	Stipulates primary interest of the people of the state is conservation of available water resources. Requires the maximum reuse of reclaimed water.	Section 5.17.1 and Section 4.3, Alternatives
California Water Code Section 1200	Divides California water rights into three categories: surface water, percolating groundwater, and “subterranean streams that flow through known and definite channels”.	Section 5.17.1

Table 5.17-1 Summary of Applicable Water Resources LORS

LORS	Applicability	Where Discussed in AFC
The Porter-Cologne Water Quality Control Act: California Water Code Section 13000 et. seq.	Requires the State Water Resources Control Board (SWRCB) and the nine RWQCBs to adopt water quality standards to protect State waters, including identification of beneficial uses, definition of narrative and numerical water quality criteria, and implementation procedures.	Sections 5.17.1
Title 22 California Code of Regulations (CCR) Sections 64400.80 through 64445	Requires periodic monitoring of water quality for potable water wells (non-transient, non-community water systems.	Section 5.17.1
Title 23 CCR Division 3, Chapters 9 and 15	Establishes requirements for waste discharge reporting and requirements specifying conditions for protection of water quality. Outlines classification, siting, and construction criteria for waste management units and discharges of waste to land. Provides guidance for surface impoundments and Land Treatment Units (LTUs).	Section 5.17.1
Title 27 CCR Division 2, Chapter 3	Provides guidance for surface impoundments and LTUs. Specifies siting and construction requirements and sets forth monitoring protocols and statistical measures to detect and evaluate LTU performance and determine if groundwater has been impacted by the facility.	Section 5.17.1
California Public Resources Code Section 25300 et seq., including Section 25523(a)	The CEC will approve the use of “fresh inland” water for cooling purposes by power plants only under certain circumstances. Requires submission of information to the CEC concerning proposed water resources and water quality protection in the AFC.	Section 5.17.1
State Water Resources Control Board	A series of policies adopted by the SWRCB including the following: 1) Anti-Degradation Policy, 2) Power Plant Cooling Water Policy, 3) Water Reclamation Policy, 4) Sources of Drinking Water Policy, 5) Procedures and Policies for Investigation, Clean-up and Abatement of Discharges, 6) Recycled Water Policy, and 7) Water Quality Enforcement Policy.	Section 5.17.1
Local		
Riverside County Ordinance Code, Title 13, Chapter 13.20 – Water Wells	Sets forth requirements for permitting, siting, constructing and destroying groundwater wells. Stipulates conditions for abandonment and taking wells out of service, including filing of a “Notice of Intent” and required reoccurrence filing frequency.	Section 5.17.1

Table 5.17-1 Summary of Applicable Water Resources LORS

LORS	Applicability	Where Discussed in AFC
Riverside County Ordinance Code, Title 8, Chapter 8.124 – Sewage Discharges	Addresses general management requirements, installation regulation, cleaning and termination or abandonment of private sewer systems.	Section 5.17..1
Riverside County Title 15, Chapter 15.24 and 15.80	Chapter 15.24 sets forth installation and inspection requirements for locating septic tanks, disposal/leach fields, seepage pits. Chapter 15.80 sets for requirements for development of projects in special flood hazard areas. These regulations are designed to comply with the National Flood Insurance Program regulations.	Section 5.17.1

5.17.1.1 Federal LORS

Clean Water Act of 1977 (Including 1987 Amendments) Sections 401, 402 and 404

The primary objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's surface waters. Pollutants regulated under the CWA include "priority" pollutants, including various toxic pollutants; "conventional" pollutants, such as biochemical oxygen demand, total suspended solids, oil and grease, and pH; and "non-conventional" pollutants, including any pollutant not identified as either conventional or priority.

Clean Water Act Section 401

Section 401 of the CWA requires certification from the RWQCB that the proposed project is in compliance with established water quality standards. Projects that have the potential to discharge pollutants are required to comply with established water quality objectives. These requirements include the implementation of Best Management Practices (BMPs) during site grading activities and other activities associated with construction of the facility.

Section 401 provides the SWRCB and the RWQCB with the regulatory authority to waive, certify, or deny any proposed federally permitted activity, which could result in a discharge to waters of the State. To waive or certify an activity, these agencies must find that the proposed discharge will comply with state water quality standards. According to the CWA, water quality standards include beneficial uses, water quality objectives/criteria, and compliance with the EPA's anti-degradation policy.

No license or permit may be issued by a federal agency until certification required by Section 401 has been granted. Under the CWA, USACE Section 404 permits are subject to RWQCB Section 401 Water Quality Certification (Title 23 CCR Sections 3830 through 3869). As such, a determination of "federal waters" under Section 404 is required by the USACE. The ephemeral drainages on the Site were found not to conform to the requirements for designation as jurisdictional waters of the U.S. However, this finding still needs to be formally confirmed by the USACE and this process is underway.

While there is not a direct requirement under a 404 jurisdiction, the RWQCB has authority under Porter-Cologne to regulate discharge of waste to waters of the state. The definition of the waters of the state is

broadly than that for waters of the U.S. in that all waters are considered to be a water of the state regardless of circumstances or condition. The term “discharge of waste” is also broadly defined in Porter-Cologne, such that discharges of waste include fill, any material resulting from human activity, or any other “discharge” that may directly or indirectly impact waters of the state relative to implementation of Section 401 of the CWA.

Porter-Cologne authorizes the RWQCB to regulate discharges of waste and fill material to waters of the state, including “isolated” waters and wetlands, through the issuance of waste discharge requirements (WDRs). Under Porter-Cologne all parties proposing to discharge waste that could affect the quality of waters of the state, other than into a community sewer system, shall file with the appropriate RWQCB a Report of Waste Discharge (ROWD) containing such information and data as may be required by the RWQCB. As such, the BSPP will file a ROWD for evaluation of 401 water quality impacts and in association with the proposed LTU. The schedule for filing of such document is provided in Section 5.17.1.5.

Clean Water Act Section 402

Direct and indirect discharges and storm water discharges into waters of the United States must be made pursuant to a NPDES permit (CWA Section 402). NPDES permits contain industry-specific, technology-based limits and may also include additional water quality-based limits, and establish pollutant-monitoring requirements. A NPDES permit may also include discharge limits based on Federal or State water quality criteria or standards.

In 1987, the CWA was amended to include a program to address storm water discharges for industrial and construction activities. Storm water discharge is covered by an NPDES permit, either as an individual or general permit. The Colorado River Basin RWQCB administers the NPDES permit program under the CWA in the Project area. Appendix L of this AFC provides a preliminary construction SWPPP/DESCP.

Clean Water Act Section 404

Activities resulting in the dredging or filling of jurisdictional waters of the U.S. require authorization under a Section 404 permit issued by the USACE. The USACE may grant authorization under either an individual permit or a nationwide permit (NWP) to address operations that may affect the ephemeral washes on the Project site. Section 404 permits are also subject to CWA Section 401 water quality certification through the RWQCB.

An evaluation for jurisdictional waters on the Project site was performed by the Applicants. The ephemeral drainages on the Site were found not to conform to the requirements for designation as jurisdictional waters of the U.S. As noted above, this finding is under review and still needs to be confirmed by the USACE. Several drainages on the Site were delineated as jurisdictional waters of the State and are discussed in Section 5.17.1.2. A report documenting the results of the evaluation of the presence of jurisdictional waters of the U.S. is provided in Appendix F.

Bureau of Land Management Regulations

The BLM currently manages the land where the Project is proposed in the Palo Verde Mesa. Part 2800 of Title 43 sets forth application requirements through the BLM for granting a ROW for the Project. Pending Project approval, a site-wide inspection will be performed by a certified professional soil scientist and specific requirements pertaining to Project grading and soil erosion will be developed as part of the joint BLM/CEC review process for the Project. These regulations may include implementation of BMPs to

prevent the discharge of pollutants (i.e., sediment) into waterways. Applicable BMPs will be incorporated into the preliminary construction SWPPP/DESCP in Appendix L.

Resource Conservation and Recovery Act, Title 40 CFR Part 260 et seq.

RCRA establishes requirements for the treatment, storage, and disposal of hazardous wastes. These requirements include seismic and floodplain protection standards that must be followed by treatment, storage, and/or disposal facilities constructed, operated, or maintained for hazardous wastes that are located within certain distances of fault lines and floodplains.

No active fault lines are present on the Project site according to maps and databases published by the United States Geological Survey (USGS) and the California Division of Mines and Geology (DMG). In addition, no active fault zones are present within one mile of the Project site; however, the site is approximately 1.5 miles east of an unnamed fault located at the western end of the McCoy Mountains (DMG 1967, 1994). Regardless of whether there are faults across the Project site, because the Project is located in a seismically active area, all Project structures must be designed to comply with the California Building Code (CBC) and Uniform Building Code (UBC) Zone 3 requirements. The CBC and UBC base seismic design on minimum lateral seismic forces ("ground shaking"). The goals of the Codes are to provide structures that will: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage but with some non-structural damage; and 3) resist major earthquakes without collapse but with some structural and non-structural damage. Section 5.5.2.2 discusses seismicity issues affecting the property in more detail. No portions of the Project site are located on or within a designated floodplain (see Section 5.17.2.9).

The U.S. Bureau of Reclamation, Colorado River – Proposed Accounting Surface Rule, 73 Federal Register 40, 916 (July 16, 2008) (subsequently withdrawn)

The Consolidated Decree of the United States Supreme Court in *Arizona vs. California*, 547 U.S. 150 recognized that consumptive use of water from the Colorado River can occur by groundwater withdrawal. Under this decree, users within the lower Colorado River Basin (which includes the BSPP) can divert tributary flow before it reaches the Colorado River. Once it reaches the river, entitlements are required for diversions. Wilson and Owen-Joyce and Owen-Joyce and others proposed the "river aquifer", which is hydraulically connected to the Colorado River, and the "accounting surface", which is defined as groundwater levels that would occur should the Colorado River be the only source of groundwater in the aquifer. Water levels higher than the accounting surface indicate recharge from tributary water sources. Wells drawing water from the river aquifer (or water below the accounting surface) draw water from the Colorado River, and as such need to be accounted in the consumptive use of the river. In cases where water is drawn from the river aquifer, an entitlement is required from the USBR. The USBR proposed the accounting surface rule to eliminate the unlawful use of Colorado River on July 16, 2008 in the Federal Register (73 Federal Regulation 40,916). The USBR is currently reviewing comments to the proposed rule.

There are no existing wells on the Project site. In 2000, a water level measurement from a well (well 5/22-31E1) about 3,000 feet north of the proposed site boundary yielded a depth-to-groundwater of 225 feet below the ground surface (bgs). At this depth, and at a surface elevation of 476 feet, the elevation of the water table below the site is estimated to be about 251 feet above mean sea level (msl). By comparison, the reported elevation of the accounting surface is between 248 and 252 feet msl. Based on this, groundwater beneath the Project site is at or below the accounting surface and by definition water is present within the river aquifer, which is hydraulically connected to the Colorado River.

Water below the accounting surface would require entitlement from the USBR. The Colorado River Board of California is responsible for applying for this water on behalf of entities seeking water

entitlements, whether the water is from the Colorado River proper, from the flood plain or from land overlying the accounting surface area. To administer this water, the USBR entered into a contract with the City of Needles, California, to monitor and act as a contracting agent for entities the USBR determines are eligible for this water.

The Project is proposing to use annually about 600 afy of groundwater from an onsite source for operational processes, including mirror washing, process makeup, equipment cooling, dust suppression and potable uses. Because groundwater is the only source of water for the proposed Project, and if the proposed rule is established, the Applicant will be required to submit an Application for Lower Colorado Water Supply Project Water to the Colorado River Board of California for entitlement to the groundwater. A contract with the City of Needles would be required to withdraw this water. Currently, however, there is no timeline for final implementation of the accounting surface rule.

5.17.1.2 State LORS

State of California Constitution Article X, Section 2

Article X, Section 2 prohibits the waste or unreasonable use of water, regulates the method of use and method of diversion of water and requires all water users to conserve and reuse available water supplies to the maximum extent possible.

California Storm Water Permitting Program

California Construction Storm Water Program. Construction activities that disturb one acre or more are required to be covered under California's General Permit for Discharges of Storm Water Associated with Construction Activity, Water Quality Order 99-08-DWQ (General Construction Permit CAS 000002). Activities subject to permitting include clearing, grading, stockpiling, and excavation.

The General Construction Permit requires the development and implementation of a SWPPP that specifies BMPs that will reduce or prevent construction pollutants from leaving the site in storm water runoff and will also minimize erosion associated with the construction project. The SWPPP must contain site map(s) that show the construction site perimeter; existing and proposed structures and roadways; storm water collection and discharge points, general topography both before and after construction; and drainage patterns across the site. Additionally, the SWPPP must describe the monitoring program to be implemented. BSPP also will prepare a DESCOP to meet CEC requirements (Appendix L). The content of a DESCOP is very similar to a SWPPP, but the DESCOP covers both construction and operation in one document whereas separate SWPPPs are prepared for construction and operation.

California Industrial Storm Water Program. Industrial activities with the potential to impact stormwater discharges are required to obtain a NPDES permit for those discharges. In California, an Industrial Storm Water General Permit, Order 97-03-DWQ (General Industrial Permit CAS 000001) may be issued to regulate discharges associated with ten broad categories of industrial activities, including electrical power generating facilities. The General Industrial Permit requires the implementation of management measures that will protect water quality. In addition, the discharger must develop and implement a SWPPP and a monitoring plan. Through the SWPPP, sources of pollutants are to be identified and the means to manage the sources to reduce storm water pollution described. The monitoring plan requires sampling of storm water discharges during the wet season and visual inspections during the dry season. A report documenting the status of the program and monitoring results must be submitted to the RWQCB annually by July 1.

The General Industrial Permit, which requires the development and implementation of a SWPPP, is required for the Project's operations phase. The Applicant will prepare a separate SWPPP that outlines

the monitoring and reporting plan, along with storm water mitigation measures for the facility based on BMPs.

California Water Code

Section 461. Stipulates that the primary interest of the people of the State of California is the conservation of all available water resources and requires the maximum reuse of reclaimed water as an offset to using potable resources.

There are no plans for the BSPP to use reclaimed water. However, the Plant will be developed to minimize water usage and recycle water where appropriate. Dry cooling has been proposed for the project, and process makeup water will be recycled for a savings of about 150 afy. Additional water use mitigation measures are proposed as part of the project and outlined in Section 5.17.4 of the AFC.

Section 1200 "Water Rights." All water in California falls within one of three categories: surface water, percolating groundwater, or "subterranean streams that flow through known and definite channels." California's water rights law is a hybrid system in that the use of certain types of water requires a permit from the SWRCB, while other types of uses are governed by common law. Only surface water and subterranean stream water are within the permitting jurisdiction of the SWRCB. Since 1914, appropriation of those waters has required a SWRCB permit, and is subject to various permit conditions. Interstate water courses (such as the Colorado River) have additional contract requirements that are the equivalent of permits. For example, use of Colorado River water requires a contract with the Secretary of the Interior (through the Bureau of Reclamation).

Pre-1914 appropriative and riparian rights do not require a permit. Riparian rights are correlative rights of equal priority among all riparian right holders. The place of use of such water is limited to riparian property (property that is contiguous to a watercourse) that has not had its riparian rights severed. Riparian rights are senior to any appropriative rights, and may not be separated from the riparian parcel and used elsewhere.

Groundwater can be (a) the underground portion of a surface water course (subject to the same rights/permits as the affiliated water course); (b) a wholly underground water course which is treated like a water course; or (c) percolating groundwater. Water subject to appropriation is defined in Water Code Section 1201, as "all water flowing in any natural channel," except water that is or may be needed for use upon riparian land or water that is otherwise appropriated. The SWRCB's authority over groundwater extends only to the underground portion of a surface stream and to the water in un-appropriated subterranean streams that flow through known or defined channels, except as it is or may be reasonably be needed for useful and beneficial purposes upon lands riparian to the channel through which it is flowing. The traditional test to establish SWRCB jurisdiction over groundwater was whether there is sufficient evidence of bed and banks and water flowing along a line of a surface stream (Sax 2002). Recent case law has redefined the boundaries of an underground stream to mean the bedrock bottom and side boundaries that are materially less permeable than the alluvium holding groundwater found within an alluvial valley across which flows a surface stream. If there is insufficient evidence to support a finding that the groundwater fits this definition, the SWRCB has no jurisdiction and no permit is required to appropriate the water.

Percolating groundwater has no SWRCB permit requirement and supports two kinds of rights: (a) overlying rights, a correlative right of equal priority shared by all who own overlying property and use groundwater on the overlying property; and (b) groundwater appropriative rights for use of the overlying property or on overlying property for which the water rights have been severed. The right to use groundwater on property that is not as an overlying right is junior to all overlying rights, but has priority among other appropriators on a first in time use basis. Overlying users cannot take unlimited quantities

of water without regard to the needs of other users. Surplus groundwater may be appropriated for use on non-overlying lands, provided such use will not create an overdraft condition.

Riparian water rights, groundwater rights and appropriative rights are all subject to modification to some degree if there is a basin-wide adjudication, which proceeding can be commenced before the SWRCB as an adjudicative body (not a permitting role) or before a Court. In adjudication, unused riparian rights and unused overlying rights can be subordinated to appropriative rights.

Water rights in California can be held by any legal entity. Thus the owner can be an individual, related individuals, non-related individuals, trusts, corporations and/or government agencies. Water rights are considered real property. Riparian rights and overlying groundwater rights are lost if severed from the land, while appropriative rights can be preserved and transferred to other properties. Transfers of water for use elsewhere are permissible without transfers of water rights, subject to many other conditions and approvals, including a "non-injury" to other water rights holders test, assessment of environmental impacts, and for post 1914 appropriative rights, SWRCB approval of any change in place of use, diversion point and/or purpose of use.

The California Water Code allows any local public agency that provides water service whose service area includes a groundwater basin or portion thereof that is not subject to groundwater management pursuant to a judgment or other order, to adopt and implement a groundwater management plan (California Water Code Sections 10750 et. seq.) Groundwater Management Plans often require reports of pumping and some restrictions on usage. There is no Groundwater Management Plan for the Palo Verde Mesa Groundwater Basin listed on the DWR website on Groundwater Management Plans.

The California Legislature has found that by reason of light rainfall, concentrated population, the conversion of land from agricultural to urban uses and heavy dependence on groundwater, the counties of Riverside, Ventura, San Bernardino and Los Angeles have certain reporting requirements for groundwater pumping. Any person or entity that pumps in excess of 25 af of water in any one year must file a "Notice of Extraction and Diversion of Water" with the SWRCB. (See Water Code Sections 4999 et. seq.) The Project would be subject to this requirement since it is located in Riverside County and will require more than 25 afy.

As noted in Section 5.17.1.1, the BSPP is in Riverside County and the Palo Verde Mesa has no perennial streams. The Project site is located on BLM land that overlies the Palo Verde Mesa Groundwater Basin, which has a surface area of about 226,000 acres. Groundwater beneath the Project site has been proposed as being within the "accounting surface" of the Colorado River, which means that extracted groundwater is replaced with water from the Colorado River. Entitlements to extract and use the groundwater beneath the site are granted by the USBR through their designated representative in California, the Colorado River Board of California. After eligibility for groundwater extraction has been approved by the USBR, a contract must be established with the City of Needles to acquire the water. In California, the City of Needles monitors the use of water extracted from the river aquifer and is the designated contracting agent for the USBR.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1967, Water Code Section 13000 et. seq. requires the SWRCB and the nine RWQCBs to adopt water quality standards to protect State waters. Those standards include the identification of beneficial uses, narrative and numerical water quality criteria, and implementation procedures. Water quality standards for the proposed project area are contained in the Water Quality Control Plan for the Colorado River Basin Region (Basin Plan), which was adopted in 1994 and was amended in 2006. This plan sets numeric and/or narrative water quality criteria controlling the discharge of wastes to the State's waters and land.

The Applicant proposes to construct a LTU as part of the facility. The LTU will be used to receive, temporarily store, and treat soil impacted with heat transfer fluid (HTF). The Project will comply with Title 23 CCR Division 3, Chapters 9 and 15 regarding the establishment of requirements for waste discharge and reporting along with requirements specifying conditions for the protection of water quality. Under Chapter 9, the RWQCB is required to issue a ROWD for discharges of waste to land pursuant to the Water Code. The report requires the submittal of information regarding the proposed discharge and waste management unit design and monitoring program. WDRs issued by the RWQCB provide construction and monitoring requirements for the proposed discharge. Chapter 15 outlines siting, construction, and monitoring requirements for waste discharges to land for landfills, surface impoundments, LTUs, and waste piles. The Chapter provides closure and post-closure maintenance and monitoring requirements for Class II designated waste facilities that are applicable to this project.

The Project will also comply with CCR Title 27 Division 2, Chapter 3. Section 20377 provides guidance for LTUs, referencing general criteria (Section 20320), precipitation, and drainage control (Section 20365) and seismic design requirements (Section 20370). Section 20250 stipulates operational and maintenance procedures to minimize mobilization of waste materials. Additional information regarding the HTF for this Project is discussed in Section 5.6 – Hazardous Materials.

Section 13050. Surface waters (including ephemeral washes) that are affected by the Project are waters of the State and are subject to State requirements and the RWQCB's authority to issue WDRs for construction and industrial storm water activities.

Section 13260 et seq. This section requires filing with the appropriate RWQCB a ROWD for activities in which waste is discharged that could affect the water quality of the State. The report shall describe the physical and chemical characteristics of the waste and include the results of all tests required by regulations adopted by the board, any test adopted by the Department of Toxic Substances Control (DTSC) pursuant to Section 25141 of the Health and Safety Code for extractable, persistent, and bio-accumulative toxic substances in a waste or other material, and any other tests that the SWRCB or RWQCB may require.

Section 13173 (Designated Wastes). This section defines designated waste as either: a) hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Section 14142 of the Health and Safety Code, or, b) Non-hazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or could reasonably be expected to affect beneficial uses of the waters of the state contained in the appropriate state water quality control plan.

As noted above, the Applicant proposes to construct an LTU to treat HTF-impacted soils. In 1995, the California DTSC determined that soils containing HTF up to 10,000 mg/kg were considered non-hazardous. However, recently the DTSC indicated that any determination of waste classification needs to be site specific. Wastes containing HTF are discussed in detail in Section 5.6, Hazardous Wastes.

Section 13240 et seq. (Water Control Plan). The Basin Plan for the Colorado River Basin Region establishes water quality objectives, including narrative and numerical standards that protect the beneficial uses of surface and ground waters in the region. The Basin Plan describes implementation plans and other control measures designed to ensure compliance with statewide plans and policies and provides comprehensive water quality planning. The following chapters are applicable to determining appropriate control measures and cleanup levels to protect beneficial uses and to meet the water quality objectives: Chapter 2, Beneficial Uses; Chapter 3, Water Quality Objectives; and the sections of Chapter 4, Implementation, entitled "Point Source Controls" and "Non-Point Source Controls."

- **Beneficial Uses:** Chapter 2 of the Basin Plan describes beneficial uses of surface and ground waters. Beneficial uses of surface waters for the Palo Verde Mesa are not listed in the Basin Plan. The beneficial uses of ground waters of the Palo Verde Mesa Hydrologic Unit (717.00) are: municipal and domestic supply, industrial service supply, and agricultural supply.
- **Water Quality Objectives:** Region-wide numeric and narrative objectives for general surface waters are described in Chapter 3 of the Basin Plan under the “General Surface Water Quality Objectives” and region-wide objectives for groundwater under the “Ground Water Objectives.”
- **Waste Discharge Requirements:** Chapter 4 of the Basin Plan describes “Point-Source Controls” for wastewater reclamation and reuse, stormwater, and septic systems. The discussion of “Non-Point Source Controls” in the Basin Plan describes the authority given to the RWQCB to certify projects for CWA Section 401 permits.

Section 13243. Under this section, the Regional Water Boards are granted authority to specify conditions or areas where the discharge of waste will not be permitted. The discharge of designated waste can only be discharged to an appropriately designed waste management unit.

Section 13263 (Waste Discharge Requirements). The RWQCB will regulate the proposed discharge of fill material, including structural material and/or earthen wastes into wetlands and other waters of the State through WDRs. The RWQCB considers WDRs necessary to adequately address potential and planned impacts to waters of the State and to require mitigation for these impacts to comply with the water quality standards specified in the Basin Plan.

WDRs from the RWQCB are required for the LTU that will be used to treat (through bioremediation techniques) HTF-impacted soil. The Applicant will submit a ROWD application to the RWQCB after AFC submittal.

Section 13271 (Discharge Notification). CWC section 13271 requires any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the state, or discharge or deposited where it is, or probably will be, discharged in or on any waters of the state to notify the Office of Emergency Services (OES) of the discharge as specified in that section. The OES then immediately notifies the appropriate regional board and the local health officer and administrator of environmental health of the discharge.

Section 13550. “The Legislature hereby finds and declares that the use of potable domestic water for non-potable uses, including, but not limited to, cemeteries, golf courses, parks, highway, landscaped areas, and industrial and irrigation uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is available which meets all of the following conditions, as determined by the State Board.” This section requires the use of recycled water for industrial purposes subject to recycled water being available and upon a number of criteria including: provisions that the quality and quantity of the recycled water are suitable for the use, the cost is reasonable, the use is not detrimental to public health, and the use will not impact downstream users or biological resources.

Section 13551. This section prohibits a person or public agency, including a State agency, city, county, city and county, district, or any other political subdivision of the State, shall not use water from any source of quality suitable for potable domestic use for non-potable uses if suitable recycled water is available as provided in Section 13550.

Section 13552. This section specifically identifies the use of potable domestic water for cooling towers as unreasonable use of water within the meaning of Article X Section 2 of the California Constitution, if suitable recycled water is available and the water meets the requirements set forth in Section 13550.

Section 13571. Requires that anyone who constructs, alters, or destroys a water well, cathodic protection well, groundwater monitoring well, or geothermal heat exchange well, file a well completion report with the California Department of Water Resources (DWR).

With no nearby sources of water available and no existing water supply wells on the Project site, a water supply well and groundwater monitoring wells will be constructed at the Site. These wells are required as part of the evaluation of water resources for the Project. A well completion report will be filed with DWR for each well that is constructed. Measures will be undertaken to protect the groundwater wells (whether for water supply or for monitoring purposes) on the Project site through the use of physical barriers (e.g., fencing, traffic bollards, etc.). In the event that an existing well is altered or destroyed, a well completion report will be filed with the DWR.

California Code of Regulations

Title 22, Article 3, Sections 64400.80 through 64445. This section requires monitoring for potable water wells, defined as non-transient, non-community water systems (serving 25 people or more for more than six months); the Project will employ approximately 130 workers during operations. Regulated wells must be sampled for bacteriological quality once a month and the results submitted to the California Department of Health Services (DHS). The wells must also be monitored for inorganic chemicals once and organic chemicals quarterly during the year designated by the DHS. DHS will designate the year based on historical monitoring frequency and laboratory capacity.

Title 23, Division 3, Chapter 9. Requires the RWQCB to issue a report of waste discharge for discharges of waste to land pursuant to the Water Code. The report requires submittal of information regarding the proposed discharge and waste management unit design and monitoring program. WDRs issued by the RWQCB provide construction and monitoring requirements for the proposed discharge. The SWRCB has adopted general waste discharge requirements (97-10-DWQ) for discharge to land by small domestic wastewater treatment systems.

Title 23, Division 3, Chapter 15. Regulates all discharges of hazardous waste to land that may affect water quality. Chapter 15 broadly defines a waste management area as “an area of land, or a portion of a waste management facility, at which waste is discharged.” Therefore, unless exempted, all discharges of hazardous waste to land that may affect water quality are regulated by Chapter 15. This chapter outlines siting, construction and monitoring requirements for waste discharges to land for landfills, surface impoundments, land treatment units, and waste piles. The chapter provides closure and post-closure maintenance and monitoring requirements for surface impoundments that are applicable to the Project.

Title 27, Section 2000 et seq. and Title 23, Section 2510 et seq. These sections include requirements for siting and minimum waste management standards for discharges of waste to land. Establishes monitoring and corrective action requirements for discharges to land, including spills and leaks and other unauthorized discharges. Requires, assurances of financial responsibility for closure and post-closure activities and corrective actions for all known or reasonably foreseeable releases.

As discussed above, the Project will employ a LTU to manage soils impacted by releases of HTF. WDRs will be obtained from the RWQCB.

Provisions of Title 27 CCR apply to designated and non-hazardous solid waste. Provisions of Title 23 apply to hazardous waste. Engineered alternatives that are consistent with Title 27 and Title 23 CCR performance goals may be considered for approval by the RWQCB.

Section 20375 provides guidance for surface impoundments, including construction requirements (Table 4.1), operation, maintenance, and inspection. Section 20377 provides guidance for LTUs,

referencing general criteria (Section 20320) and precipitation and drainage control (Section 20365) and seismic design requirements (Section 20370). The regulations stipulate operational and maintenance procedures to minimize mobilization of the waste materials (Section 20250).

State Water Resources Control Board Policies

Anti-Degradation Policy (Resolution No. 68-16). Requires the RWQCB, in regulating the discharge of waste, to: (a) maintain existing high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses, and will not result in water quality less than that described in State or Regional Water Boards policies; and (b) require that any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters, must meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that: a) a pollution or nuisance will not occur and b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

Power Plant Cooling Water Policy (Resolution No. 75-58). On June 19, 1975, the SWRCB adopted the Water Quality Control Policy on the Use and Disposal of Inland Waters used for Power Plant Cooling. The purpose of the policy is to provide consistent statewide water quality principles and guidance for adoption of discharge requirements, and implementation actions for power plants that depend on inland waters for cooling. State policy encourages the use of wastewater for power plant cooling and sets the following order of preference for cooling purposes: 1) wastewater being discharged to the ocean; 2) ocean water; 3) brackish water or irrigation return flows; 4) inland waste waters of low total dissolved solids (TDS); and 5) other inland waters. The criteria for the selection of water delivery options involves economic feasibility; engineering constraints, such as cooling water composition and temperature; and environmental considerations such as impacts on riparian habitat, groundwater levels, and surface and subsurface water quality.

The Project will use dry-cooling methods and does not propose to use groundwater for power plant cooling. The project will use groundwater for mirror washing, auxiliary equipment cooling, process makeup, dust suppression, and potable supply.

Water Reclamation Policy (Resolution No. 77-01). Under this policy, the SWRCB and RWQCBs shall encourage reclamation and reuse of water in water-short areas. Reclaimed water will replace or supplement the use of fresh water or better quality water.

Sources of Drinking Water Policy (Resolution No. 88-63). This policy designates all groundwater and surface waters of the States as drinking water, except where: (a) the total dissolved solids are greater than 3,000 milligrams per liter, (b) the well yield is less than 200 gallons per day (gpd) from a single well, (c) the water is a geothermal resource, or in a water conveyance facility, or (d) the water cannot reasonably be treated for domestic use using either best management practices or best economically achievable treatment practices.

Policies and Procedures for Investigations and Clean-up and Abatement of Discharges Under CWC Section 13304 (Resolution No. 92-49). This policy establishes requirements for investigation and clean-up and abatement of discharges. Under this policy, clean-up and abatement actions are to implement applicable provisions of Title 23 CCR Chapter 15, to the extent feasible. The policy also requires the application of Section 2550.4 of Chapter 15 when approving any alternative cleanup levels less stringent than background. It requires remediation of the groundwater to the lowest concentration levels of constituents technically and economically feasible, which must be at least protect the beneficial uses of

groundwater, but need not be more stringent than is necessary to achieve background levels of the constituents in groundwater.

Water Quality Control Policy for Recycled Water (Resolution No. 209-0011). (Not yet approved by Office of Administrative Law as of May 2009). The Recycled Water Policy is intended to promote sustainable local water supplies. The purpose of this Policy is to increase the use of recycled water from municipal wastewater sources that meets the definition in CWC Section 13050(n), in a manner that implements state and Federal water quality laws.

Public Resources Code

Section 25300 et seq. In the 2003 “Integrated Energy Policy Report”, consistent with SWRCB Policy No. 75-58 and the Warren-Alquist Act, the CEC adopted a policy stating they will approve the use of “fresh inland” water for cooling purposes by power plants only where alternative water supply sources and alternative cooling technologies are shown to be “environmentally undesirable” or “economically unsound.” As noted above, the BSPP does not propose to use groundwater for power plant cooling. The Project will use dry-cooling methods and does not propose to use groundwater for power plant cooling. The project will use groundwater for mirror washing, auxiliary equipment cooling, process makeup, dust suppression, and potable supply

Section 25523(a). The CEC shall prepare a written decision after the public hearing on an application, which includes specific provisions relating to the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety.

The administering agencies for the State LORS are the CEC, the SWRCB, and the Colorado River Basin RWQCB. The Project will comply with the applicable State LORS related to water use and quality during construction and operation.

5.17.1.3 Local LORS

Riverside County Ordinance Code, Title 13, Chapter 13.20 – Water Wells

Section 13-.20.160 Well Logs. This section requires that a report of well excavation for all wells dug or bored for which a permit has been issued be submitted to the Riverside County Department of Environmental Health within 60 days after completion of drilling. DWR Form 188 shall satisfy this requirement as stipulated under California Water Code Section 13571.

Section 13.20.190 Water Quality Standards. This section requires that water from wells that provide water for beneficial use shall be tested radiologically, bacteriologically and chemically as indicated by the Riverside County Department of Environmental Health. Laboratory testing must be performed by a State of California-certified laboratory. The results of the testing shall be provided to the County Department of Environmental Health within 90 days of pump installation.

Section 13.20.220 Well Abandonment. This section provides that all abandoned wells shall be destroyed in such a way that they will not produce water or act as a channel for the interchange of water, and will not present a hazard to the safety and well-being of people or animals. Destruction of any well shall follow requirements stipulated in DWR Bulletin No.74-81, provided that at a minimum the top 50 feet shall be sealed with concrete, or other approved sealing material. Applications for well destruction must be submitted 90 days following abandonment of the well and in accordance with Section 14.08.170.

Section 13.20.240 Declaration of Proposed Reuse. Requires that any well that has not been used for a period of one (1) year shall be properly destroyed unless the owner has filled a “Notice of Intent” with the health officer declaring the well out of service and declaring his intention to use the well again.

Riverside County Ordinance Code, Title 8, Chapter 8.124 - Sewage Discharge

Section 8.124.030, General Requirements for an Approval and Construction Permit. The type, capacity, location, and layout of each private system shall comply with the rules and regulations of the health officer, and the WDRs of the RWQCB. A private system shall be constructed and maintained on the lot which is the site of the building it serves, unless the health officer in his discretion authorizes a different location.

Section 8.124.050 Operation Permits. Each private system shall be managed, cleaned, regulated, repaired, modified and replaced from time to time by the owner or owner’s representatives, in accordance with the rules, regulations and other reasonable requirements of the health officer in conformity with the WDR issued by the regional board and in a manner which will safeguard against and prevent pollution, contamination or nuisance.

Riverside County Title 15 Chapter 15, 24 Uniform Plumbing Code

Section 15.24.010. Adopted by Reference,, Appendix K, Section K1 amended – Private Sewage Disposal – General. In certain areas of the County which have poor soils or other problems relative to sewage disposal, the sewage disposal system shall be installed and inspected before the building foundation inspection is made.

Section 15.24.010. Adopted by Reference, Appendix K, Section K6(i) amended – Disposal fields. Disposal fields, trenches, and leaching beds shall not be paved over or covered by concrete or any material that can reduce or inhibit any possible evaporation of the sewer effluent unless the area of the disposal fields, trenches, and leaching beds is increased by a minimum of 25 percent.

Riverside County Title 15 Chapter 15.80 Regulating Flood Hazard Areas and Implementing the National Flood Insurance Program

This ordinance was developed to comply with Title 44 CFR Part 65 regarding requirements for the identification and mapping of areas identified as Federal Emergency Management Agency (FEMA) Special Flood Hazard Areas. The ordinance is applicable to development within unincorporated areas of Riverside County and is integrated into the process of application for development permits under other county ordinances including, but not limited to, Ordinance Nos. 348, 369, 457, 460, and 555. When the information required, or procedures involved, in the processing of such applications is not sufficient to assure compliance with the requirements of Chapter 15.80, a separate application must be filed.

Flood insurance rate maps for the Project site or surrounding areas have not been prepared by FEMA. According to the Riverside County General Plan (Riverside County, 2000) the Project site and surrounding lands do not lie within a 100-year or 500-year flood plain.

5.17.1.4 Involved Agencies and Local Contacts

Agencies with jurisdiction over water resources issues include the following: BLM (land-use permit/lease agreement), Colorado River Basin RWQCB (WDRs, NPDES and storm water permitting), California Department of Fish and Game (Waters of the State) and Riverside County Department of Environmental Health (groundwater well and septic system permits). Contacts for these agencies are provided in Table 5.17-2.

Table 5.17-2 Water Resources Agencies and Contact Information

Contact	Phone/Email	Permits/Issue
Holly Roberts Associate Field Manager Bureau of Land Management Palm Springs Field Office 1201 Bird Center Drive Palm Springs, CA 92262	(760) 833-7100 Holly_Roberts@blm.gov	Land-Use Permit/Lease Agreement
Mr. John Carmona Senior Water Resources Control Engineer Colorado River RWQCB Palm Desert Office 73-720 Fred Waring Dr., Suite 100 Palm Desert, CA 92260	(760) 346-7491 jcarmona@waterboards.ca.gov	Waste Discharge Requirements (WDR), NPDES and Storm Water Permits, CWA 401
Cliff Raley Water Resources Control Engineer Colorado River Basin RWQCB Palm Desert Office 73-720 Fred Waring Dr., Suite 100 Palm Desert, CA 92260	(760) 776-8962 CRaley@waterboards.ca.gov	Chapter 15 Permits (Low Threat Discharge Permit) and Non-Chapter 15 Permits
Jay Chen Colorado River Board of California 770 Fairmont Avenue, Suite 100 Glendale, California 91203-1068	(818) 500-1625 crb@crb.ca.gov	Application for entitlement to extract groundwater as water source for plant construction and operation (Board applies to USBR for entitlement on behalf of Applicant)
Don Park Riverside County Department of Environmental Health Environmental Resources Management Division Palm Desert - ERM Office 38-686 El Cerrito Road Palm Desert, CA 92211	(760) 393-3390 dpark@co.riverside.ca.us	Groundwater Supply Well Permits
Karen Tracy Riverside County Department of Environmental Health District Environmental Services Division 554 S. Paseo Dorotea Palm Springs, CA 92264	(760) 320-1048 ktracy@co.riverside.ca.us	Sewage/Septic System

5.17.1.5 Required Permits and Permit Schedule

Water resources-related permits include a ROWD and subsequent WDRs as part of the proposed LTU. A low-threat discharge permit for purge water from a proposed pump test was also secured (June 22, 2009)

from the Colorado River Basin RWQCB prior to conducting the field program. Storm water permits also are required for the construction and operation of the facility.

There are no existing wells or sources of water near the proposed Project site. A new water supply well will be drilled and constructed on the site for industrial/process water use and also for drinking purposes (though not for power plant cooling). A well permit application will have to be filed with the Riverside County Environmental Health Department prior to the installation of this well. Similarly, new groundwater observation wells will be drilled and constructed on the site in order to measure changes in water levels as part of the aquifer test that will be performed at the site. Well permit applications have been filed with the County Environmental Health Department. Observation wells will not be used to supply water and will be abandoned consistent with Riverside County and State requirements prior to site construction.

Table 5.17-3 lists the water-related permits that are required for the Project and identifies the schedule for submitting applications for these permits.

Table 5.17-3 Required Water Resources Permits and Schedule

Permit/Approval	Schedule
Waste Discharge Requirements (WDRs)	ROWD application for re-alignment of washes and the LTU will be submitted to the Colorado River Basin RWQCB by January 2010.
CWA 401 Water Quality Certification	A CWA 401 application will be submitted to the Colorado River Basin RWQCB by January 2010.
California General Construction Permit CAS 000002	Permit application must be submitted to the Colorado River Basin RWQCB at least six weeks prior to the start of construction activities.
General Industrial Permit CAS 000001	The permit application package will be submitted to the Colorado River Basin RWQCB at least six weeks prior to commencing operations.
Well Permits	Permit applications to abandon or install groundwater wells must be submitted to the County at least four weeks prior to the start of well installation activities.
Septic System	The permit application must be submitted to the Riverside County Department of Environmental Health at least six weeks prior to the start of field mobilization for construction activities.

5.17.2 Affected Environment

The Project site is located in the northwestern Colorado Desert, which is part of the greater Colorado Desert Geomorphic Province. The Colorado Desert Province is characterized by isolated mountain ranges separated by broad alluvium-filled basins of Cenozoic-age sedimentary and volcanic materials overlying older rocks. Much of the Colorado Desert lies at low elevations, with some areas below sea level.

The Project is located in the alluvial-filled basin of the Palo Verde Mesa in eastern Riverside County approximately eight miles west of the City of Blythe. The area is characterized by barren mountain ranges and isolated hills with broad alluvial-filled valleys. The Palo Verde Mesa Groundwater Basin is bounded by non-water-bearing rocks of the Big Maria and Little Maria mountains on the north, by the McCoy and Mule Mountains on the west, and by the Palo Verde Mountains to the south (Figure 5.17-1). To the east are the Palo Verde Valley and the Colorado River. The Big Maria Mountains and the McCoy

Mountains are the contributing watersheds to the Palo Verde Mesa. McCoy Wash, a tributary of the Colorado River, flows southeast at the northeastern-most part of the site. Surface water drains from the surrounding mountains toward the Colorado River. There are no perennial streams on the Palo Verde Mesa. The Palo Verde Mesa Groundwater Basin encompasses an area of about 353 square miles or 226,000 acres.

The Palo Verde Mesa has a generally low relief until near the surrounding mountains (McCoy, Big Maria, and Little Maria Mountains). There are two distinct river-cut terraces that form a topographic break westward from the Colorado River. The Project site is located on the uppermost of the two terraces that makeup the mesa. Approximately three miles east of the eastern site boundary, a sharp break in the slope forms the boundary between the Palo Verde Mesa and the Palo Verde Valley, which is 80 to 130 feet below the mesa. In this region, the Palo Verde Valley is roughly equivalent to the recent historic floodplain of the Colorado River.

Because the Project's only linear facility (its transmission line) will not require water as part of its operation, and only minimal amounts during construction, the following discussion focuses on the Project site only.

5.17.2.1 Climate and Precipitation

The climate in the Palo Verde Mesa, which is classified as a "low desert", is characterized by high aridity and low precipitation. The region experiences a wide variation in temperature, with very hot summer months with an average maximum temperature of 108 degrees Fahrenheit (°F) in July and cold dry winters with an average minimum temperature of 66.7 °F in December. The Blythe area receives approximately 3.5 inches of rainfall per year. The majority of the rainfall occurs during the winter months, but rainfall during the late summer is not uncommon. The summer rainfall events tend to be a result of tropical storms that have a short duration and a higher intensity than the winter rains. Annual precipitation ranges from 0.02 to 0.47 inches per month for a total annual precipitation of just under four inches per year. Tables 5.17-4 and 5.17-5 display the average monthly and annual minimum and maximum temperatures and precipitation (rainfall) from 1913 to 2008 collected from the Blythe Airport, located approximately one mile southeast of the Project site.

Table 5.17-4 Climate Temperature Data for Blythe Airport, California

Month	Temperatures °F					Mean Number of Days			
	Monthly Averages			Record Extremes		Max. Temp.		Min. Temp.	
	Daily Max.	Daily Min.	Monthly	Record High	Record Low	90°F & Above	32°F & Below	32°F & Below	0°F & Below
Jan	66.7	41.5	54.1	89	20	0	0	2.7	0
Feb	72	45.4	58.7	93	22	0.2	0	0.8	0
Mar	78.4	50.2	64.3	100	30	3.1	0	0.1	0
Apr	86.4	56.5	71.5	107	38	11.6	0	0	0
May	95.2	64.4	79.8	114	43	23.8	0	0	0
Jun	104.5	72.7	88.6	123	46	29	0	0	0
Jul	108.4	81	94.7	123	62	30.9	0	0	0

Table 5.17-4 Climate Temperature Data for Blythe Airport, California

Month	Temperatures °F					Mean Number of Days			
	Monthly Averages			Record Extremes		Max. Temp.		Min. Temp.	
	Daily Max.	Daily Min.	Monthly	Record High	Record Low	90°F & Above	32°F & Below	32°F & Below	0°F & Below
Aug	106.6	80.2	93.4	120	62	30.6	0	0	0
Sep	101.3	73	87.2	121	51	28.4	0	0	0
Oct	89.8	60.9	75.3	111	27	17.6	0	0	0
Nov	75.8	48.6	62.2	95	27	0.8	0	0.1	0
Dec	66.7	41.2	53.9	87	24	0	0	1.8	0
Year	87.7	59.6	73.6	123	20	175.9	0	5.5	0
Source: Western Regional Climate Center (WRCC) 2009									

Table 5.17-5 Precipitation Data for Blythe Airport, California

Month	Rainfall (Inches) (1913 – 2008)				Mean Number of Days			
	Mean	Highest Month	Lowest Month	Highest Daily	0.01 inches or More	0.10 inches or More	0.50 inches or More	1.0 inches or More
Jan	0.47	2.48	0	1.64	3	1	0	0
Feb	0.44	3.03	0	1.66	2	1	0	0
Mar	0.36	2.15	0	1.52	2	1	0	0
Apr	0.16	3	0	2.67	1	0	0	0
May	0.02	0.22	0	0.22	0	0	0	0
Jun	0.02	0.91	0	0.91	0	0	0	0
Jul	0.24	2.44	0	1.4	1	0	0	0
Aug	0.64	5.92	0	3	2	1	0	0
Sep	0.37	2.14	0	1.9	1	1	0	0
Oct	0.27	1.89	0	1.61	1	1	0	0
Nov	0.2	1.84	0	1.04	1	0	0	0
Dec	0.39	3.33	0	1.42	2	1	0	0
Year¹	3.59	---	---	3	17	8	2	1
Notes: 1. Totals may not match the data in the columns due to rounding errors. Source: WRCC 2009								

5.17.2.2 Groundwater

Groundwater in the area of the Project is contained within Colorado River Hydrologic Region, which covers about 20,000 square miles of southeastern California. The Colorado River Hydrologic Basin Region is bound to the west by the San Bernardino, San Jacinto and Launa Mountain ranges; to the north by the New York, Providence, Granite, Old Dad, Bristol, Rodman and Ord Mountain ranges and the State of Nevada; to the east by the Colorado River and the State of Arizona; and to the south by the border of the United States and Mexico. The Colorado River Hydrologic Basin Region includes the Salton Sea and the Coachella and Imperial Valleys.

The Colorado River Hydrologic Region is subdivided into 28 groundwater basins, one of which is the Palo Verde Mesa Groundwater Basin where the Project site is located (Figure 5.17-1). West of the Project site is the Chuckwalla Valley Groundwater Basin that is separated from the Palo Verde Groundwater Basin by a gap in the McCoy and Mule Mountains. The Palo Verde Mesa Groundwater Basin is bound by the McCoy Mountains to the west, the Little Maria Mountains to the northwest, and the Big Maria Mountains to the northeast. There are no significant subsurface structural features that restrict groundwater flow within the Palo Verde Mesa Groundwater Basin according to the DWR, and the Palo Verde Mesa Groundwater Basin is not listed on the DWR list of adjudicated groundwater basins (<http://www.water.ca.gov/groundwater/>). In the Palo Verde Mesa Groundwater Basin, groundwater provides a source of water for domestic, industrial, and agricultural water supply. Surface water from the Colorado River through the Palo Verde Irrigation District (PVID) is the primary source of water for agriculture in the area. In 2007, the PVID supplied about 375,000 af of water for use by agricultural entities within the boundary of their district.

Regionally, the ground surface slopes gently downward in a southeast direction at a gradient of less than one percent. Topography at the BSPP site slopes gently away from the McCoy Mountains from the west to the east-southeast (Figure 5.17-2). The existing topographic conditions show an average slope of about one foot in 80 feet (1.25 percent) in the foot-hill area of the McCoy Mountains on the west side of the site and about one foot in 200 feet (0.50 percent) toward the southeast on the central and east side of the Project site. Steeper grades of ten to fifteen percent are present along the western side of the unnamed mound in Sections 6 and 7, T6S R22E on the northeastern-most corner of the Project site. A steeper grade of 50 percent was measured along the southwestern side of an unnamed knob on the northeast in Section 4, T6S R22E. According to the USGS 7.5-Minute Quadrangle topographic maps covering the BSPP site, ground surface elevations at the plant site range from approximately 820 feet above mean sea level (msl) in the west to about 410 feet above msl in the east.

5.17.2.3 Hydrogeology

The Project is located in the alluvial-filled basin of the Palo Verde Mesa (Figures 5.17-3a and 3b). Regionally, this valley formed as a structural depression or a pull-apart basin and is composed of two broad geologic units, consolidated rocks and unconsolidated alluvium. The consolidated rocks consist of pre-Tertiary age igneous and metamorphic rocks, which form the basement complex, and in some locations, Tertiary-age volcanic rocks that overlie the basement complex. The consolidated rocks are nearly impermeable except for areas where fracturing or weathering has occurred. It is uncertain the extent that these rocks yield water to the alluvium. The flux of groundwater into and out of the bedrock is unknown.

Hydrostratigraphy

The geologic units that are important in an evaluation of the water resources in the Palo Verde Mesa area are the thought to be Miocene-age fanglomerate, the Bouse Formation, and the fluvial deposits of the Colorado River. According to Metzger and others, the Miocene-age fanglomerate is made up chiefly of

cemented gravel composed of poorly-sorted pebbles and some fine-grained material with a provenance from a nearby source. The fanglomerate represents composite alluvial fans deposits that built up from local mountains as the fans prograded toward the valley. Because the fanglomerate was deposited on an irregular surface having considerable local relief, it varies widely in thickness. Locally, the fanglomerate may be absent, but at some places (e.g., Milpitas Wash area), it is at least 2,100 feet in thickness. Near Parker, Arizona, wells with specific capacities as much as 15 gallons per minute per foot of drawdown (gpm/ft) have been reported in the fanglomerate.

The Bouse Formation is of Pliocene age and is composed of tufa and basal limestone overlain by interbedded clay, silt, and sand. These sediments were deposited in an embayment of the Gulf of California. The thickness of the formation is relatively uniform throughout the area. The Bouse Formation was measured at 767 feet in thickness in a well LCRP-27 drilled by the USGS. Metzger and others indicated that in general, the Bouse Formation yields very limited quantities of water. The exception is in the upper part of the Bouse Formation, which is composed mostly of sand, where it is reported to yield water at moderate rates. Well LCRP 27 completed in this sandy zone had a reported specific capacity of 13 ½ gpm/ft.

The fluvial deposits of the Colorado River are divided into older and younger alluvium. The older alluvium is comprised of a basal-cemented gravel overlain by inter-layered sequences of sand and pebbly sand, with lenses of cobble gravels and silt and clay. The gravels consist of quartzite, limestone, and chert clasts derived from local mountain sources. In the Blythe area, this sequence has been measured as much as 600 feet in thickness. The lenses of cobble-gravel beds yield copious amounts of water according to Metzger and others.

The younger alluvium is composed of a basal gravel overlain by sand. The younger alluvium is generally from 90 to 125 feet thick above its basal gravel. The basal gravel may be absent locally in the Palo Verde Mesa, but the alluvium is continuous throughout the flood plain. In well 6S/23E-32E1, located approximately ½-mile west of Blythe, the bottom of the Colorado River fluvial deposits reportedly occurs to a depth of about 506 feet bgs.

The fluvial deposits of the Colorado River have the highest hydraulic conductivity of any saturated sediments in the area of the Project according Metzger and others. The USGS study noted that wells that tap a sufficient thickness of these gravels had specific capacities greater than 100 gpm/ft.

Well Data and Stratigraphic Relationships in the Palo Verde Mesa Groundwater Basin

Available well data published by the DWR and the USGS were reviewed for wells in the Palo Verde Groundwater Basin (Appendix J). A search of DWR, USGS and Groundwater Ambient Monitoring and Assessment (GAMA) database information yielded some information on many wells within the area of the Palo Verde Mesa Groundwater Basin and in the vicinity of the Project site (see Figures 5.17-4a and 5.17-4b, respectively).

However, a search for boring log information in the Palo Verde Groundwater Basin from DWR and USGS database sources yielded little details regarding the stratigraphy of the groundwater basin. A limited number of boring logs are in a published report by Metzger and others on the hydrogeology of the Parker-Blythe-Cibola Area of California and Arizona. Three of the boring logs found in this document were located within the Palo Verde Groundwater Basin and were used to provide a north-south cross section through the basin. A summary of lithologic information from these wells is provided below:

- The log for well 5/22-28C1 (Figure 5.17-4a) indicated Colorado River alluvium sands were encountered from the ground surface to about 357 feet bgs; 33 feet of sandy clay, and sand with clay streaks were encountered between 390 and 502 feet bgs; 16 feet of sand and gravel were

encountered from 502 to 518 feet bgs. From 518 to about 1,118 feet bgs were predominantly clays of the Bouse Formation with infrequent beds of gravel and sands 20 to 23 feet in thickness.

- The log for well 6/22-15Q1 (Figure 5.17.4a) indicated Colorado River alluvium sands were encountered from the ground surface to 92 feet bgs; 21 feet of gravel followed by sands were encountered from 113 to 341 feet bgs; 16 feet of gravel were followed by sands with pebbles or caliche from 357 to 520 feet bgs; and finally alternating sequences of gravel and sand to 585 feet bgs.
- The log for the well known as “Basha’s Well” (7/21-14H1) about 5 miles south of the Project site indicated Colorado River alluvium sands were encountered from the ground surface to 527 feet bgs (Figure 5.17-4a). Clay with sand of the Bouse Formation was encountered from 583 to 740 feet bgs; basal sands of the Bouse Formation extended from 740 to 845 feet bgs. Below this depth, the fanglomerate of Miocene-age was encountered, consisting of black sand with red clay streaks or sands with clay streaks from 845 to 940 feet bgs; decomposed granite was encountered from 940 to 1,078 feet bgs; 22 feet of clay followed by 66 feet of decomposed granite with clay streaks was encountered. Finally, red clay with streaks of sand was encountered from 1,166 to 1,367 feet bgs. The logs for these three borings are provided in Appendix J.

The logs described above were used to provide a generalized understanding of subsurface conditions and develop a generalized geologic cross section for the Palo Verde Mesa Groundwater Basin (Figure 5.17-5). The limited geologic data reveal general variations in the sediments from the north to the south.

In general, sediments from the northern to the southern portions of Palo Verde Mesa Groundwater Basin are comprised of a higher percentage of coarse-grained sediments (sands and gravels). These sediments are the proximal facies of coalescing alluvial fans. The coarse-grained sediments are fairly uniform in thickness ranging from about 520 feet thick in the north to about 500 feet thick in the south. The deposits represent fluvial deposits of the Colorado River that are the result of several broad periods of degradation and aggradation by the Colorado River. Underlying the sequence of coarse-grained sediments are deposits of fine-grained sediments consisting predominantly of interbedded clays, silts, and sands. The fine-grained sediments are thicker in the northern part of the basin where they are over 500 feet thick. In contrast, on the southern end of the basin the fine-grained sediments are thinner, where they are approximately 300 feet thick. This fine-grained sequence is considered to represent the upper part of the Bouse Formation. The contact between the Bouse Formation and the overlying deposits of the Colorado River is an erosive surface. Below the fine-grained sequence are coarse-grained deposits (sandy gravel) which represent the lower Bouse Formation or possibly the Miocene-age fanglomerate.

5.17.2.4 Groundwater Occurrence and Flow

In the northern part of the Palo Verde Mesa Groundwater Basin, north of the Project site and in the area of the McCoy Wash, groundwater generally flows from the north to the southeast. This flow pattern is a result of the primary recharge mechanism in this area, groundwater from the Rice Valley Groundwater Basin flowing into the northern part of the Basin. In the southern part of the Palo Verde Mesa Groundwater Basin, the groundwater flow pattern is influenced by subsurface flow from the Colorado River, and flow in this area is generally towards the south. A minor component of groundwater flow into the Palo Verde Mesa Groundwater Basin originates from the Chuckwalla Valley Groundwater Basin. Here, groundwater flows eastward into the Palo Verde Mesa Groundwater Basin through the gap between the McCoy and Mule Mountains at a rate of about 400 afy. Discharge of groundwater occurs as outflow to the Palo Verde Valley and by pumping although an estimate of total discharge has not been quantified by the DWR or as part of this study.

Historic water level data for the Palo Verde Mesa Groundwater Basin and the Palo Verde Valley Groundwater Basin to the west and southwest of the BSPP are provided in Appendix J. Figures 5.17-6 and 5.17-7 show the groundwater elevation contours for the Palo Verde Mesa Groundwater Basin from water level data from 1971 and 2000, respectively. The water level data from 1971 show local variations in water level contours in the area due east of the Project, which suggest localized pumping in support of agriculture. Water level data from 2000, show that the water levels had recovered in the area due east of the site, and show a southerly flow of groundwater coincident with the flow in the Colorado River. Groundwater flow in the Basin is from the north, southeast through McCoy Wash at a gradient of 0.001 feet/foot (ft/ft), then south-southwest at gradients of between about 0.0003 and 0.0008 ft/ft in a direction coincident with the flow of the Colorado River (Figure 5.17-7).

Groundwater in the Palo Verde Mesa Groundwater Basin is reportedly contained under both confined and unconfined conditions. Most wells in the area are completed in the sand and gravel of the Colorado River deposits where unconfined or water-table conditions prevail. Test wells drilled as part of the USGS study indicate that water in the lower part of the Bouse Formation and the underlying the Miocene fanglomerate are present under artesian (confined) conditions.

Historic water level data and hydrographs for selected wells within the Palo Verde Mesa Groundwater Basin are provided in Appendix J. Figure 5.17-8 shows hydrographs for selected wells within the Basin with water level data from 1944 to 2007. The wells selected to present the hydrograph data were chosen to present the most complete set of historic water level elevation data across the Palo Verde Mesa Groundwater Basin. Please note that these are not all the wells with hydrograph information; refer to Appendix J for a complete listing of water level data and additional hydrographs.

The hydrographs shown on Figure 5.17-8 show that the water level in the Palo Verde Mesa Groundwater Basin has generally remained stable over the recent history. In well 4/21-9B1 at the north end of the Basin, groundwater elevation remained unchanged from 1971 to 2000. In wells closer to the Project site, groundwater elevations have decreased about 5 feet in well 5/22-31E1 from 1966 to 2000 and in well 6/22-32R1 from 1947 to 2006. The relatively stable groundwater levels that have been measured over the decades-long period of time suggest that groundwater withdrawal from the underlying aquifer has not significantly changed the water balance within the Basin. This is probably in large part due to recharge of water from the Colorado River.

5.17.2.5 Groundwater Use and Recharge to the Palo Verde Mesa Groundwater Basin

Groundwater Use

Groundwater has been and continues to be used to meet water demands for local uses in the Palo Verde Mesa area. Groundwater is not controlled by the local surface water supplier, PVID. As noted above, the PVID supplied about 375,000 af of water for agricultural use in 2007.

No known groundwater use occurs on the BSPP, nor are there any known records of groundwater wells on the site. The Palo Verde Mesa Basin has had moderate to extensive groundwater development in the past. In 1965 and 1966, wells were drilled on the Palo Verde Mesa. At the time, an estimated 200 acres of land were irrigated from pumping. In the 1970's and 1980's, agricultural groundwater development on the Palo Verde Mesa increased substantially to over 6,500 acres, but the majority of this agricultural effort was economically unproductive by the late 1980's and early 1990's.

Historically, groundwater has been developed on the Palo Verde Mesa for use at the Blythe Airport. At least 48 large-diameter wells were drilled in the basin to service the Blythe Air Base (now Blythe Airport), nearby housing developments, and irrigation. However, the closing of the Air Base has eliminated the development that had occurred in the McCoy Wash part of the Basin.

Recharge to the Palo Verde Mesa Groundwater Basin

According to Metzger and others, sources of recharge to the Palo Verde Mesa Groundwater Basin are the Colorado River, precipitation, and underflow from adjacent areas, including the Rice and Chuckwalla Valleys. More recent information by the DWR, suggest that recharge of the basin is chiefly from percolation of runoff from the surrounding mountains, with percolation of precipitation to the valley floor and subsurface inflow as contributing (albeit minor) additional sources of recharge. Natural recharge in the basin is estimated at about 800 afy (and recharge by underflow from the up-gradient Chuckwalla Valley is estimated to be 400 afy. In total the recharge from sources other than the Colorado River are about 1,200 afy. Recharge from applied irrigation water diverted from the Colorado River through the Palo Verde Irrigation District is unknown, though could be significant given that 375,000 af were provided in 2007.

While the discharge from the Palo Verde Mesa Groundwater Basin is not known, it is reasonable to assume that the discharge for agriculture use has in the past exceeded the recharge from sources other than the Colorado River. The absence of significant changes in water level data in the Palo Verde Mesa Groundwater Basin over time suggest a buffering affect from other source of recharge which is presumed to be the Colorado River. As such, because of the influence from the river recharge, the groundwater basin is not in overdraft nor would be expected to be so in the future even with the onset of the proposed Project operational water use.

5.17.2.6 Groundwater Wells Within One Mile of the Project Site

A total of 581 water supply wells were identified in online databases in the Palo Verde Mesa Groundwater Basin (Appendix J). A field survey of wells that were within a one-mile radius of the Project site was conducted in July 2009 to identify their location, confirm operational status, and estimate their use within the basin (See Figure 5.17-4b). The field survey consisted of walking or driving county roads. In the case where access could not be secured, well status was determined from the nearest road. It is important to note that in some cases while the well could be identified, its operational status could not be determined, as access to the land was not possible.

From the field survey, no active water supply wells were encountered. A total of nine out of 13 wells were identified within one-mile of the site. All of these wells were used for irrigation supply. Sources of electrical power (i.e., power lines) had been removed from these wells and electrical generators were not observed at any of these wells. With no source of electricity for the water pumps it is presumed that these nine wells are inactive. The remaining four wells were not accessible, and as such their status could not be determined. Available information for water supply wells located within a one-mile radius of the Project site are summarized on Table 5.17-6 and shown on Figure 5.17-4b.

Table 5.17-6 Estimated Water Usage

State Well Number	Depth		Screen Interval		Specific Capacity ¹ gpm/ft
	Elevation (ft msl)	TD (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	
6/21E-24K01	410.5	--	--	--	--
6/21E-25A02	397.1	317	--	--	--
6/21E-25F01	411.7	--	--	--	--

Table 5.17-6 Estimated Water Usage

State Well Number	Depth		Screen Interval		Specific Capacity ¹ gpm/ft
	Elevation (ft msl)	TD (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	
6/21E-25L01	400.2	--	--	--	--
6/22E-08J01	408	302	--	--	35.56 - 64.80
6/22E-17B01	399.64	302	--	--	25.00 - 30.60
6/22E-17L01	400	445	--	--	37.88 - 54.90
6/22E-17L02	397	323	--	--	42.73 - 56.90
6/22E-18A01	406.88	298	--	--	30.19- 35.14
6/22E-18J01	408	302	--	--	32.43 - 34.62
6/22E-19N02	397	300	--	--	--
6/22E-19N03	397.2	394	--	--	--
6/22E-19R01	395.6	300	--	--	--

5.17.2.7 Aquifer Properties

Properties used to define the aquifer characteristics include hydraulic conductivity, transmissivity, and storage coefficient. Hydraulic conductivity is the property of the aquifer material to transmit water, and is expressed in units of feet per day (ft/d). Transmissivity is the hydraulic conductivity multiplied by the thickness of the sediments capable of storing water, and is expressed in units of gallons per day per foot or feet squared per day (ft²/d). Storage coefficient refers to the percentage of water that can be released from the aquifer material pore space, and is used for unconfined or water table conditions.

In their development of a two-dimensional superposition model for the Parker-Palo Verde-Cibola area, which includes the Palo Verde Mesa Groundwater Basin, Leake and others, evaluated published aquifer testing data and through statistical analysis derived a range of transmissivity values from a low value of 6,300 ft²/d to an average value of 26,200 ft²/d. They selected a storage coefficient of 0.20 to approximate aquifer conditions throughout their model domain which includes the Chuckwalla Valley Groundwater Basin and the Palo Verde Mesa Groundwater Basin.

The total storage capacity in the Palo Verde Mesa Groundwater Basin is estimated at 6,840,000 af according to the DWR. The DWR reconnaissance study on sources of power plant cooling water in the desert area of southern California, estimated that usable storage in the basin was about 5,000,000 af and that about half of the usable storage was in the McCoy Wash part of the basin north-northwest of the BSPP.

Groundwater production in the basin averages 1,650 gpm. The maximum yield reported was 2,750 gpm from well 6S/22E-16A1. The DWR study indicated that large well yields are common for properly designed and developed wells near the edge of the flood plain. Well yields in the rest of the Basin, where sand is the dominant lithology, are lower. Yields greater than 1,000 gpm are reported in wells in the McCoy Wash area. The depth of these wells range from 250 to 600 feet and the wells are 12 to 16-

inches in diameter. The Blythe Energy Project indicated a yield for a well on the mesa due south of the BSPP site of over 3,000 gpm and a specific capacity of 125 gpm/ft.

As part of the current Project water resources field investigation, a pumping test will be performed in a new well to be installed to better develop an understanding of site hydrogeologic conditions and aquifer properties. Two observation wells will be installed in support of the proposed pumping test program. Data from the pumping will be used to improve the site conceptual mode and refinement of the groundwater model that was employed to assess the radius of influence from the proposed project pumping. The objectives of the pumping tests include the following:

- Estimating well yield and efficiency,
- Determining the hydraulic influence from pumping, and
- Estimating the aquifer characteristics.

Both an eight-hour step-drawdown and 96-hour constant-rate-discharge pumping test will be conducted using a submersible pump operated by a licensed drilling contractor. Water generated from the test will be discharged to a retention basin via aluminum pipe and managed away from any structures or roads and sensitive biological habitats. Before, during, and after the test, water levels will be monitored by hand and using down-hole pressure transducers. At the completion of the three proposed tests, the pressure transducer data will be downloaded for analysis and all equipment, piping, portable generators or motors will be removed. The data will be analyzed both by hand and using AQTESOLV™ to determine well efficiency, yield, aquifer characteristics, and the influence on adjacent pumping wells.

5.17.2.8 Groundwater Geochemistry

In general, water quality in the Palo Verde Mesa Groundwater Basin is generally of higher quality near the edge of the flood plain and becomes progressively higher in dissolved solids away from the flood plain and with depth. Figure 5.17-9 is a tri-linear plot (piper plot) of available groundwater data for wells within the Palo Verde Mesa Groundwater Basin. It shows that water is generally sodium sulfate-chloride in character.

According to the DWR (1979) report, the total dissolve solid (TDS) content of shallow groundwater in the basin ranges from 730 to 3,100 milligrams per liter (mg/L); however, one deep well in the southwest portion of the basin had a TDS content of 4,500 mg/L. Analyses of water from 11 public supply wells in the Basin show that TDS content ranges from 590 to 1,790 mg/L and averages approximately 1,089 mg/L.

Table 5.17-7 presents the analytical results for a select number of wells that were sampled between October 1962 and April 1966 located within 0.5 mile and 1.5 mile from the Project site. Given the long screen interval for these wells, and the uncertain methodology of sampling the wells, these data likely represent an average water quality of the more permeable sediments over the screen interval.

A review of the water quality data for the Palo Verde Mesa and Palo Verde Valley groundwater basins is provided in Table 5.17-7 and indicate the following:

- TDS concentrations (466 to 5,640 mg/L) generally exceeded the recommended standard of 500 mg/L, for a drinking water resource in California. TDS concentrations above 1,000 mg/L were reported in water samples from wells due east of the BSPP (Figure 5.17-10).
- Fluoride concentrations (0.2 to 6.3 mg/L) in some cases exceed the State of California Maximum Contaminant Levels (MCLs) for drinking water (2.0 mg/L). Fluoride concentrations above the

MCL are present in water samples from wells on the Mesa due east of the BSPP. Concentrations are significantly lower and below the MCL in water samples from wells located in the floodplain (Figure 5.17-11).

- Chloride concentrations range from 77.7 to 3,220 mg/L, and in some cases exceed the State of California Secondary MCL for drinking water (250 mg/L). Higher concentrations are found in wells on the Mesa and in the area of McCoy wash northwest of the valley (Figure 5.17-12).
- Boron concentrations range from 40 micrograms per liter [ug/L] to 2,000 ug/L. In the area of the BSPP most of the water samples collected exceeded the State of California Action Level for drinking water (1,000 ug/L) (Figure 5.17-13).
- Sulfate concentrations range from 90 to 1,850 mg/L, and in some cases exceed the State of California Secondary MCLs for drinking water (250 mg/L). The highest concentrations mirror those found for chloride and are located in the area east of the site and in the area of McCoy Wash (Figure 5.17-14).

In general, based on available water quality data from the immediate vicinity of the BSPP, groundwater below the Project site would probably not be suitable for domestic supply without treatment given the elevated levels of TDS and high concentrations of fluoride, chloride, boron, and sulfate. The data show that generally, TDS and sulfate concentrations were generally higher with increasing distance from the Colorado River, with the highest concentrations occurring in the area of the McCoy Wash and the gap to the Chuckwalla Valley Groundwater Basin. Fluoride, chloride, and boron concentrations were generally lower in the eastern portions of the Basin (closer to the Colorado River) and increased westward towards the Project site. The much higher TDS concentrations below the mesa reflect recharge of high TDS water to the Palo Verde Mesa Groundwater Basin from percolation along the mountain front and underflow from Rice and Chuckwalla Valleys. Inter-mixing of water from these sources and the Colorado River produces the concentration gradient and decline in concentrations in an easterly direction from the Project site toward the river.

Additional water quality sampling will be performed as part of the planned aquifer testing program. Groundwater samples collected from the new well during the pumping test will be analyzed for an extended suite of water quality parameters including TDS, soluble metals, general minerals, radionuclides, volatile and semivolatile organic compounds, pesticides, and herbicides.

Table 5.17-7 Summary of Water Quality Data
(all values reported in mg/L)

Analyte	Well 5/22-28C1 (October 1962)	Well 5/22-33J1 (October 1962)	Well 6/21-36R1 (May 1964)	Well 6/22-17L1 (April 1966)	All Palo Verde Mesa Groundwater Basin Wells ¹
Arsenic	--	--	--	--	0.0011
Bicarbonates (HCO ₃)	--	--	--	--	20 - 736
Boron	--	--	1.07 ²	1.40 ²	0.04 – 2.0
Calcium	--	--	--	--	9.21 – 844
Carbonates (CO ₃)	--	--	--	--	0 - 12
Fluoride	--	1.7	3	--	0.02 – 6.30
Chloride	440	400	420	380	77.7 - 3,220

Table 5.17-7 Summary of Water Quality Data
(all values reported in mg/L)

Analyte	Well 5/22-28C1 (October 1962)	Well 5/22-33J1 (October 1962)	Well 6/21-36R1 (May 1964)	Well 6/22-17L1 (April 1966)	All Palo Verde Mesa Groundwater Basin Wells ¹
Iron	--	--	--	--	0 – 0.4
Magnesium	--	--	--	--	0.1 - 351
Manganese	--	--	--	--	0 – 3.9
Nitrate (N)	--	--	--	--	--
Selenium	--	--	--	--	--
Sodium	--	--	--	--	0 - 2,000
Sulfate	970	380	440	400	90 – 1,850
Total Hardness (CaCO ₃)	--	--	--	--	28 - 3,600
Total Dissolved Solids (TDS)	2,160	--	1,470	1,250	466 – 5,640
pH	--	--	--	--	7.0 – 8.6
Source: USGS NWIS water database, 2009 ¹ Metals data reported from the unfiltered ("total") sample. ² Data reported from filtered sample. <u>Key:</u> mg/L – milligrams per liter -- = no data					

5.17.2.9 Surface Water

The Project site is located on the alluvial fan sediments derived from the McCoy Mountains, located due west of the Project site. The topography slopes gently to the east-southeast at grades of less than one percent over most of the site (see Section 5.5.2.1). Existing topographic conditions show an average slope of about one foot in 80 feet (1.25 percent) toward the east on the west side of the BSPP, and about one foot in 200 feet (0.50 percent) toward the southeast on the east side of the site. Steeper grades of ten to fifteen percent are present along the western side of the unnamed mound in Sections 5, 6 and 7, T6S R22E. A steeper grade of 50 percent was measured along the southwestern side of an unnamed knob on the northeast side of the McCoy Wash in Section 4, T6S R22E. The McCoy Wash occurs about 2,000 feet from the northeastern corner of the Project site trending northwest to southeast and runs between the mound and knob features described above. Flow in the McCoy wash can be as high as 4,000 cubic feet per second, as measured in 1976 during historical flooding in the water shed.

Surface runoff and water discharged from springs along the eastern side of the McCoy Mountains generally flows east through shallow moderately defined channels towards McCoy Wash although by the time flow reaches the eastern boundary of the Project site, surface flow is to the southeast, generally mimicking the slope of the ground surface (Figure 5.17-15). Upon reaching the eastern portion of the BSPP, water moves south as there is a topographic high due east of the Project site and artificial berms

have been places along the western margin of agricultural land. Surface water moves south along these features eventually crossing through former agricultural land north of the Blythe Airport.

Several un-named dry washes have developed in both of the drainages described above. The McCoy Mountain drainage discharging into the BSPP site covers approximately four square miles with a maximum elevation of 1,828 feet and an average elevation of approximately 1,455 feet. FEMA flood insurance rate maps have not been prepared for the Project site or surrounding lands. According to the Riverside County General Plan, the Project site and surrounding lands do not lie within a 100-year or 500-year flood plain.

5.17.3 Environmental Impacts

The direct effects of the Project on local water resources associated with using groundwater for construction, specifically for demands during the site grading and dust control, and operational process water needs, and the effects of site grading and re-routing of washes that cross the Project site were evaluated to assess the potential environmental impacts. Water supply impacts would be considered significant if the Project resulted in:

- Substantial depletion of groundwater resources and interference with local wells,
- Substantial interference with groundwater recharge, or
- Use of water in a wasteful manner.

Water quality or erosion/flooding-related impacts would be considered significant if the Project resulted in:

- Degradation of groundwater quality,
- Discharge into surface waters resulting in any alteration of surface water quality, or
- Activities that cause or contribute to substantial erosion or flooding off the site.

Currently, construction plans are to clear and grade the site with heavy equipment to provide a uniform, gently southeasterly sloping grade and to construct drainage channels and roads. The preliminary cut and fill volume is estimated to be 8,300,000 cubic yards, and the grading period is estimated to be 69 months. Upon completion of the geotechnical investigation, the grading plan will be revised to reflect soil shrinkage or other losses. The current estimate of grading volume assumes no import of fill material. Due to the amount of soils and vegetation affected by grading activities, substantial water erosion control and dust control measures will be required to minimize offsite impacts. Overall, the Project will result in disturbance of approximately 7,030 acres at the Project site. A preliminary construction SWPPP/DESCP was prepared to address site management during construction and operation and to meet CEC requirements. This document is provided in Appendix L, and includes a series of management controls and BMPs to minimize erosion and impacts to drainage.

The Project is a dry-cooled facility that will use about 600 afy of groundwater from two onsite wells for all operational activities. The peak water usage during the summer months is about 818,000 gpd or about 568 gpm under an assumption of continuous pumping. The average water use of the 30-year life of the Project is about 400 gpm, with a total water use of about 18,800 af. Winter usage will be less owing to the lower ambient temperature, and lesser requirements for process water and water for dust suppression. During construction, the Project will use an average of approximately 540 afy over a 69-month period or an average of about 700 gpm under an assumption of pumping 12-hour per day. The total use during construction will be about 3,100 af.

To support the evaluation of environmental impacts, both a numerical groundwater and conceptual drainage study were completed. The conceptual drainage study included hydrologic modeling of current surface water flow and the preliminary design of the proposed re-routing of un-named washes and drainage structures (see Appendix L). Numerical groundwater modeling using a previously developed and published groundwater model for the Parker-Palo Verde-Cibola area, which includes the Palo Verde Mesa Groundwater Basin, was employed to evaluate impacts from proposed pumping of groundwater below the BSPP.

Groundwater Model

An existing numerical groundwater model was selected to provide an evaluation of Project impacts. A regional model was selected for the Project that was developed by the USGS in cooperation with the USBR for evaluation of the potential for depletion of the Colorado River from pumping in sub-adjacent groundwater basins. The regional model is a two-dimensional superposition model developed using MODFLOW code for the Parker-Palo Verde-Cibola area, which includes the Palo Verde Mesa Groundwater Basin. The model is a simple two-dimensional model, employing a simple vertical geometry and a large grid spacing to evaluate the impacts from groundwater pumping on recharge to the Colorado River. The model uses a constant value for the storage coefficient (0.20) and varies transmissivity developed from a statistical analysis of published aquifer test data. The transmissivity values are varied from a low value of 6,300 ft²/d to an average value of 26,200 ft²/d. The model grid uses a spacing of 1,320 feet throughout the domain which includes the Palo Verde Mesa, Chuckwalla Valley and Cibola area of Arizona. The Palo Verde Valley is not modeled, as groundwater there was assumed to be directly connected and part of the Colorado River. The model was published by the USGS; the text and model files are provided in Appendix J.

The existing USGS numerical groundwater model was selected to evaluate the impacts from proposed Project pumping because:

- The model included the BSPP site and was of sufficient detail and complexity to adequately evaluate impacts from the modest pumping proposed for the Project.
- It had undergone review by the USGS and USBR. As such, the model had undergone significant peer review prior to being published.
- The model is based on MODFLOW, a well established and commonly used computer code developed for numerical groundwater modeling.

While the model incorporated the Project site, several changes were required for it to be used to adequately evaluate Project pumping and the influence from the pumping on adjacent water supply wells within a one-mile radius of the site. For the analysis of influence, the model grid was modified and grid spacing tightened or made much smaller around the proposed pumping well. This allowed for a better assessment of influence from the Project pumping as the grid spacing around the pumping well was varied from about 30 feet around the well and gradually increased to a spacing of 100 feet one mile away from the pumping well, then gradually increased to 1,320 feet for the remainder of the modeling domain.

Additionally, the transmissivities used in the USGS model were also used in the assessment of Project pumping. The low (6,300 ft²/d) and average (26,200 ft²/d) values used in the USGS model were used in the analysis, in addition to using the highest transmissivity reported for the area (96,000 ft²/d), to evaluate the impacts from Project pumping. The transmissivities were not varied horizontally or vertically in keeping with the approach used by the USGS for their model. Lastly, the model depth was varied to reflect the saturated thickness of water-bearing sediments below the site. The proposed water supply well was simulated and a saturated thickness of 500 feet was estimated. The vertical dimension of the

two-dimensional model was varied to reflect this aquifer thickness below the site. A summary of the modifications to the model, the published USGS report, and the model files used for the simulations of pumping influence are provided in Appendix J.

The results of the model for construction and operational water use scenarios are provided in Sections 5.17.3.1, Construction Water Use and 5.17.3.2, Operational Water Use. The results of an ongoing aquifer testing program will be used to further refine the model. After the testing is conducted, the site specific aquifer data will be evaluated. The model will be refined based on the pumping test program and results to provide a better representation of impacts from groundwater pumping.

The modeling results presented are based on a simplified groundwater model with homogeneous transmissivity and uniform storage coefficient, which are derived from previous USGS superposition model efforts. Therefore, the modeling result should be considered preliminary. The actual cone of depression may vary subject to site-specific aquifer properties and the heterogeneity of the aquifer.

Conceptual Drainage Study

A conceptual drainage study was performed to evaluate site hydrologic conditions and provide a preliminary design basis for onsite drainage structures, and the rerouting of several unnamed washes that drain from the McCoy Mountains west of the Project site. The evaluation was designed following guidance provided in the Riverside County Hydrology Manual and the Riverside County Division Four – Standards for Drainage (see Appendix L).

Proposed drainage modifications to the Project site seek to replicate the existing flow patterns as nearly as possible. For this reason five channels have been proposed adjacent to or across the site (Figure 5.17-16). These channels are hereafter referred to as the north, central, southeast, south, and west channels. Three of these channels (north, west, and south channels) intercept the flows prior to their entry to the site then re-direct them around or through the site and convey them to the same locations where they exit the site under existing conditions. The remaining two channels (central and southeast channels) will collect runoff from the solar fields and convey them to the same locations where they exit the site under existing conditions.

The Project site will be substantially occupied by long rows of solar collectors, but these collectors are elevated above the ground and thus the ground below the mirrors remains as a pervious surface. The only portions of the site that will be impervious to surface water are the administration building, the main warehouse, portions of the power block areas, the access road between these areas, and parking lots. The amount of impervious area being created as a result of this Project is less than one percent difference from the existing condition.

The proposed solar field improvements will not change the existing upstream offsite drainage patterns. Offsite flow of up to a 100-year event will be collected in peripheral drainage ditches and conveyed around and/or through the Project site. Each of the proposed channels are sized to contain the peak flow of the 100-year, 24-hour storm event and will include necessary earth compaction and riprap side-slope protection along key reaches (e.g., directional transitions, proposed-to-natural channel transitions, and reaches with significant design velocities). The proposed channel realignment routes are shown in Figure 5.17-16.

Existing Conditions. Runoff from the McCoy Mountains discharges into shallow moderately defined channels at the base of the mountains and passes through the Project site in a southeasterly direction and is intercepted offsite by irrigation canals before reaching McCoy Wash (see Appendix L). The location of the watershed in the McCoy Mountains and the existing drainage flow paths on the Project site are shown in Figure 5.17-15. McCoy Wash is the major watercourse in the area, draining 210 square

miles of Palo Verde Mesa, McCoy Mountains, Little Maria Mountains and Big Maria Mountains. McCoy Wash occurs near the northeastern corner of the Project site but does not cross the site.

Alluvial fans radiate out from the base of the McCoy Mountains and discharge to a broad flat expanse of desert terrain sloping in a southeasterly direction. On the Project site, surface drainage flow patterns are generally in a southeasterly direction.

To provide a preliminary design basis for drainage control structures and rerouting of the washes on the Project site, the drainage analysis followed U.S. Department of Agriculture (USDA) Natural Resource Conservation Service Technical Release 55 for estimating runoff. Onsite ditches and channels, and the rerouting of the washes were sized using the Muskingum Cunge Method (Appendix L). Hydrology calculations were performed using the USACE's Hydrological Modeling System (HMS 3.3.0). Documentation and program downloads for HMS 3.3.0 can be found online at: <http://hec.usace.army.mil/software/hec=hms/documentation.html>.

North Channel and Central Channel

Proposed Realigned Drainage Channel Route. The rerouted and reshaped dry desert wash (herein referred to as the North and Central Channels) will follow the Project Site's northern boundary and central portions of the site to ultimately match the original sheet flow drainage path as shown in Figure 5.17-16. The ground surface beneath the northwest solar unit (Solar Unit # 2) will be graded so that approximately half of the runoff will flow directly to the North Channel. The ground surface beneath the remaining half of Solar Unit # 2 and all of the northeast solar unit (Solar Unit # 1) will be graded towards the south and runoff will be collected in the Central Channel. The Central Channel will convey the flow to the east where it confluent with the North Channel. This channel, which also collects runoff from a portion of the McCoy Mountains, will release the flow in a spreader fan diffuser on the northeast side of the site that will allow the stormwater flow to return to a broad-based flow regime. The purpose of the diffuser is to return the flood flows to the approximate location and depth that occur in existing conditions. For this reason, the diffusers have been designed to spread the flows out so that flow exits the end of the diffuser with an approximate depth of 3- to 9-inches and at non-erosive velocities.

The proposed North Channel will be approximately 35,210 feet long, designed to meet Riverside County requirements, and also revegetated with native vegetation to minimize habitat disturbance. The routing of the North Channel was designed to convey the 100-year storm event along the entire north side of the site, returning the flow to its natural course along the east side of the Project site. To accommodate the velocities produced by a 100-year event, modeling indicated that the channel depth would need to be about eight feet, while the average channel velocity would be about 10.9 feet per second (fps).

The calculations for the North Channel show that it may have an erosive effect at some locations in a 100-year event. The channel will be designed with 4:1 side slopes to help mitigate the erosion of the banks rather than designing them with a 2:1 side slope. Moreover, the channel bottom width will range from 70 to 140 feet to promote relatively shallow flows to minimize erosive forces. The channels will also be constructed with native material, and scour protection will be added in stress areas. A stress area is defined as a location where the erosion potential is greater than a straight, uniform channel reach, and includes junctions, transitions, and curves. The extent of the channel bank protections will be at least a distance equal to ten (10) times the design water depth and will be extended into the channel bottom to provide for potential bottom scour. No scour protection is proposed for the channel bottom in the straight sections of the channels. This is to allow the low flows to meander across the bottom replicating as nearly as possible the flow regimes under current conditions.

The proposed Central Channel will be approximately 24,650 feet long, designed to meet Riverside County requirements, and also revegetated with native vegetation to minimize habitat disturbance. The

Central Channel was designed to convey the 100-year storm event along the central portion of the Project site. To accommodate the velocities produced by a 100-year storm event, modeling indicated that the channel depth would need to be about six feet, while the average channel velocity would be about 8.8 fps.

The bottom width of the Central Channel will be approximately 42 feet – a width that will promote relatively shallow flows to minimize erosive forces and to shorten the daylight length (time required for water to reach native unmodified wash), required at the downstream end of the channel. The channel will be designed with 4:1 side slopes to insure slope stability, reduce toe erosion, and to allow for ready maintenance access to all points of the channel.

Southeast Channel

Proposed Realigned Drainage Channel Route. The proposed Southeast Channel will capture surface flow in the southeastern part of the site to match the original sheet flow drainage path as shown in Figure 5.17-16. The southeast channel will be constructed to collect onsite runoff from Solar Field #4. This channel will also use a diffuser as well as a channel-to-channel connection to return the flows to existing conditions.

The proposed channel length will be approximately 5,000 feet long, designed to meet Riverside County requirements, and revegetated with native vegetation to minimize habitat disturbance. The bottom width of the Southeast Channel will be approximately 50 feet – a width that will promote relatively shallow flows to minimize erosive forces and to shorten the daylight length required at the downstream end of the channel. The channel will be designed with 4:1 side slopes to ensure slope stability, reduce toe erosion, and to allow for ready maintenance access to all points of the channel. The Southeast Channel was designed to convey the 100-year storm event. To accommodate the velocities produced by a 100-year storm event, modeling indicated that the channel depth would need to be about 4.1 feet, while the average channel velocity would be about 8.0 fps.

South Channel

Proposed Realigned Drainage Channel Route. The South Channel will collect a small portion of offsite runoff and some of the flows from Solar Field #3. This channel will connect directly to the existing dry wash south of the solar field as shown on Figure 5.17-16.

The proposed channel length will be approximately 5,060 feet long, designed to meet Riverside County requirements, and revegetated with native vegetation to minimize habitat disturbance. The bottom width of the South Channel will be approximately 30 feet – a width that will promote relatively shallow flows to minimize erosive forces and to shorten the daylight length required at the downstream end of the channel. The channel will be designed with 4:1 side slopes to ensure slope stability, reduce toe erosion, and to allow for ready maintenance access to all points of the channel. The South Channel was designed to convey the 100-year storm event. To accommodate the velocities produced by a 100-year storm event, modeling indicated that the channel depth would need to be about 3.5 feet, while the average channel velocity would be about 4.8 fps.

West Channel

Proposed Realigned Drainage Channel Route. The West Channel will be constructed to collect a portion of flows from the McCoy Mountains tributary to the west side of the site. The West Channel flows through the site and collects additional onsite runoff from Solar Field #3 and a small portion of Field #4 as shown on Figure 5.17-16. The channel will also outlet in a spreader fan diffuser at the southeast end of the site to return the flow to existing conditions.

The proposed channel will be approximately 27,280 feet long, designed to meet Riverside County requirements, and revegetated with native vegetation to minimize habitat disturbance. The routing of the West Channel was designed to convey flows associated with the 100-year storm event. To accommodate the velocities produced by a 100-year event, modeling indicated that the channel depth would need to be about eight feet, while the average channel velocity would be about 12.2 fps.

The calculations for the West Channel show that it may have an erosive effect at some locations in a 100-year event. The channel will be designed with 4:1 side slopes to help mitigate the erosion of the banks rather than designing them with a 2:1 side slope. Moreover, the channel bottom width will be approximately 64 feet, which will promote relatively shallow flows to minimize erosive forces. The channels will also be constructed with native material, and scour protection will be added in stress areas. A stress area is defined as a location where the erosion potential is greater than a straight, uniform channel reach, and includes junctions, transitions, and curves. The extent of the channel bank protections will be at least a distance equal to ten times the design water depth and will be extended into the channel bottom to provide for potential bottom scour. No scour protection is proposed for the channel bottom in the straight sections of the channels. This is to allow the low flows to meander across the bottom replicating as nearly as possible the flow regimes under current conditions.

5.17.3.1 Construction

Construction activities are expected to take place over a period of approximately 69 months. It is anticipated that water use during this period will be from two onsite wells to provide an adequate water supply for construction and domestic purposes. Potable water will be brought in from an offsite source and held in day tanks during the term of construction. Water from groundwater below the site during construction will be used for:

- Dust suppression during grading and along roadways as necessary,
- Grading and compaction for the solar field and power block areas, infrastructure and building foundations, and
- Concrete work and other uses.

The majority of water use will be for grading which will be managed at a steady rate over the term of the construction period. There are no anticipated highs or lows in the water volume required to support grading of 8.3 million cubic yards of soil over an area of about 7,000 acres. The average water usage equates to about 499,000 gpd or a pumping rate of about 700 gpm under an operational assumption that pumping will occur 12-hours per day.

Water Use

The Project proposes to use water from an onsite well equipped with a temporary pump to support site preparation and facility construction activities. To evaluate the impacts from the pumping, the groundwater model was run under the assumption that a single well would provide water continuously over a 69-month period at a rate of about 700 gpm. This rate was selected for the numerical groundwater model to provide a conservative estimate of construction pumping impacts over the term of the construction period. To provide a level of uncertainty analysis, the model was run at a range of transmissivity values between 6,300 and 93,000 ft²/d and a range of storage coefficient values between 0.05 and 0.20.

Figure 5.17-17 shows the results of the numerical modeling for scenarios using the lowest transmissivity (6,300 ft²/d) and a storage coefficient of 0.05 and 0.20. These values produced the greatest drawdown at the pumping well and largest radius of influence to a contour of five feet of drawdown. As shown,

pumping at 700 gpm continuously for a period of 69 months, the model predicted a drawdown at the pumping well of about 28 feet with a radius of influence of between about 2,720 feet and 5,770 feet to the five-foot contour. The range in influence and drawdown reflects changes in the storage coefficient, which are the range in values reported for the Basin. A range of values was modeled since there are no site-specific data, and the storage coefficient is typically a sensitive parameter in a numerical model, where small variation corresponds to larger changes in predictive results.

These results show that during construction, a pumping well at this location would not significantly impact wells to a drawdown of greater than five feet within a one-mile radius of the Project.

Water Quality

Water quality impacts could result from releases of chemicals used during construction, such as motor oil, fuel, and solvents. These chemicals can potentially contaminate surface waters during heavy storm events, or groundwater through infiltration. A number of mitigation measures are in place to prevent spills of chemicals, as well as to respond to spills should they occur. The SWPPP and DESCP will require storm water BMPs, and temporary erosion control measures including revegetation, dust suppression and construction of beams and ditches, which will prevent accelerated soil erosion or dust generation. Adhering to proper material handling procedures and complying with the SWPPP will ensure that construction-related water quality impacts are less than significant.

Drainage Impacts

As noted above, site grading activities will be ongoing through the period of construction. During that time the site will be broken into areas and grading will proceed from one area to the next until the entire site grading has been completed. During this time, site drainage will be managed according to the BMPs provided in the construction SWPPP and DESCP in order to minimize erosion and manage storm water runoff. Though infiltration at the site is expected to be rapid, mitigation measures will include local soil berms and a detention area that will contain storm water runoff during construction. Heavy grading will occur within the plant site boundaries. Temporary erosion controls including crushed rock, silt fences and fiber rolls will be used as needed to minimize erosion in active grading areas. Additionally, water will be used to control dust and will be applied at a rate so as to minimize runoff.

Activities and products that have the potential to contaminate groundwater and surface water will be properly stored and used in a manner consistent with the approved grading plan, SWPPP, and DESCP. Good housekeeping and prompt removal of spills and leaks will be implemented to minimize storm water contact with contaminated materials. With the implementation of BMPs and procedures and protocols provided in the SWPPP and DESCP, it is anticipated that drainage and erosion control measures will adequately protect surface and groundwater resources during construction and impacts will be less than significant.

5.17.3.2 Operation

This section describes potential environmental impacts on water resources related to Project operations.

Water Use

The Project is a dry-cooled facility that will use about 600 afy (150 afy per unit) of groundwater from onsite wells for operational supply. Assuming continuous uninterrupted supply, a yearly volume of 600 af equates to an average pumping rate of about 400 gpm. The peak water usage during the summer months is about 818,000 gpd or about 568 gpm under an assumption of continuous pumping. Water use

during the winter months is estimated to be between about 293,822 gpd, or a pumping rate of about 200 gpm, assuming continuous use. Over the Project's 30-year life, water use will total about 18,800 af.

Operations. The Project proposes to use air-cooled condensers, "dry cooling", for power plant cooling. Water from two onsite wells will be used for the following consumptive uses:

- Solar mirror wash water to maintain solar collector efficiency,
- Domestic potable uses include drinking water, showering, toilets, hand washing, etc,
- Power cycle makeup water to supply the steam driving the steam turbine generators (this water is recycled and thus does not really constitute consumptive use),
- Ancillary equipment heat rejection, for cooling generators, pumps and other equipment, and
- Dust suppression.

Table 5.17-8 presents the anticipated water requirements associated with various uses for each month of the year. Estimates for water usage are based on:

- Solar mirror washing – experience at other locations with similar climatic conditions,
- Power Cycle Makeup Water and Ancillary Heat Rejection – expected monthly power production rates,
- Domestic potable use – number of employees and number of hours expected to be worked during the year. An average consumption of 37 gallons per person per day was assumed, and
- Dust suppression – concentrate from the water treatment process will be used for this purpose.

Table 5.17-8 Estimated Water Usage

Month	Approximate Water Usage Acre-Feet (gpm) ¹	Month	Approximate Water Usage Acre-Feet (gpm) ¹
January	16.64 (121.44)	July	69.93 (510.24)
February	35.62 (287.75)	August	69.90 (510.06)
March	48.27 (352.22)	September	62.08 (468.10)
April	67.19 (506.64)	October	43.70 (318.88)
May	74.83 (545.99)	November	34.18 (257.69)
June	75.32 (567.92)	December	28.92 (211.04)
¹ The estimated groundwater usage gpm is based on average daily consumption. Peak groundwater pumping rates during the summer months will be up to 568 gpm. ² Data from Water/Wastewater Report, Appendix J.			

Water Quality

Water Quality. Operation of the Project has the potential to impact water quality through improper storage and use of materials and from soil erosion. Adhering to proper material storage and handling procedures and complying with the DESCP will result in impacts to water qualities that are less than significant. The DESCP identifies BMPs to manage pollutant releases including spill and leak prevention, waste handling and employee training. Through compliance with the General Industrial Permit, all potential pollutants generated during the industrial phase will be sufficiently mitigated such that water

quality standards will not be violated. Thus, surface water and groundwater quality impacts during the operations phase will be less than significant.

Groundwater use. Figure 5.17-18 presents the Project water balance for both peak (maximum) summer usage and for typical annualized operation (i.e., average). Water will be pumped from the extraction well directly to a reverse osmosis (RO) treatment unit and then stored in two 1,000,000-gallon permeate tanks for plant operations and fire protection. Each tank will service one power block. The concentrate from the RO treatment unit will be stored in one 300,000-gallon tank and used for dust control and will be blended along with water from the onsite water wells. Power cycle makeup water from each power block will be recycled over a range of 34,500 gpd (average) to 52,750 gpd (maximum) as feed water to the RO treatment system. Water from the 1,000,000-gallon permeate tank will be used for solar mirror washing and fire control. A detailed discussion of water balance, treatment requirements, and wastewater management is provided in the Water/Wastewater Report in Appendix J.

Extraction of groundwater to support power plant requirements can result in changes to local groundwater elevations. This, in turn, could potentially reduce the pumping capacities of nearby wells and increase the energy costs of pumping from those wells. As discussed in Section 4.0, Alternatives, groundwater is the only source of process water whose availability and feasibility has been established.

Groundwater modeling was employed to evaluate the influence of the proposed pumping program for an operational supply of 600 afy. The model was used to evaluate pumping influence under an assumption of a single pumping well pumping continuously at a rate of about 400 gpm for a period of 30 years beyond the 69-month construction period (see Appendix J).

The predicted drawdown from the proposed pumping was evaluated over a range of transmissivities that were used in the USGS model over a low (6,300 ft²/d), average (26,200 ft²/d) and high (96,000 ft²/d) values. Using the lower transmissivity value and a storage coefficient of 0.05 and 0.20 the model provided the following predictions (Figure 5.17-19):

- At the pumping well a drawdown of between 17 to 19 feet would occur, and
- A drawdown of 5 feet would occur at distances between 2,790 and 8,350 feet from the pumping well.

The range of influence does not impact wells within a one-mile or less radius from the Project site beyond a drawdown of five feet. As such, the proposed Project pumping does not significantly impact adjacent water supply wells.

To evaluate the regional impacts to the water level within the Palo Verde Mesa Groundwater Basin, an assessment of the change to the regional water table from the proposed annual operational use of groundwater was evaluated using the following equation and a range of storage values and that the area of the groundwater basin is 226,000 acres:

$$V = A \cdot S \cdot dh \text{ (Fetter 1988)}$$

Where:

V = Volume of water released or taken into storage (where the negative value indicates discharge from the basin, i.e., -600 af)

A = Area of the regional aquifer (226,000 acres)

S = aquifer storage (0.05 to 0.20)

dh = change in regional water level in the Palo Verde Mesa Groundwater Basin

Rearranging and solving the equation for dh and using a range in storativity of 0.05 to 0.20, yields a change in water level within the basin of between 0.64 and 0.16 inches per year and between about 19 and 5 inches total over the 30-year life of the Project.

While this approach provides a generalized evaluation of impact and does not consider changes in the water balance, it does provide a measure of impacts analysis on the regional aquifer from the proposed operational water supply. Another comparison shows that the total proposed operational water supply (18,000 af) is about 0.3 percent of the available storage (5,000,000 af). The results would suggest the proposed operational use would not significantly impact the regional water level in the groundwater basin.

Although the water balance is not known for the Palo Verde Mesa Groundwater Basin, prior discussion indicates that recharge to the Basin from other sources is about 1,200 afy. In consideration of the recharge from the Colorado River, the proposed modest use of groundwater would not appear to be a significant increase which would send the Basin into overdraft. Prior significant periods of pumping to support agriculture only appeared to have formed localized cones of depression, not sustained regional drawdown of the water table. These periods of groundwater use were likely much higher than the proposed modest water use for the Project.

Process and Sanitary Waste Water Management

Sanitary wastes will be collected for treatment in a septic tank and disposed via a leach field located within the boundaries of the main power block. If separate control rooms with restrooms are located at the remote power blocks, smaller septic systems will be provided to receive sanitary wastes at those locations. The configuration of the power blocks being remote from the office would indicate that at least five leach fields will be required. Based on the current estimate of 11,000 gallons of sanitary wastewater production per day a total leach field area of approximately 22,000 square feet will be required spread out over multiple locations. It is recommended that an additional 22,000 square feet of land be kept undeveloped for purposes of constructing replacement leach fields should that be necessary.

Drainage and Flood Control

The proposed solar field improvements will not change the existing upstream offsite drainage patterns. The existing downstream drainage patterns and flow rates will be slightly changed due to minor adjustments in the sub basin size, which is relocated to the drainage pattern of the on-site flows. The proposed channels have been designed to contain surface flow from the 100-year storm.

The proposed onsite drainage improvements seek to replicate the existing flow patterns as nearly as possible. For this reason, five channels have been proposed across the site: North, Central, Southeast, South, and West channels. Three channels (North, South, and West Channels) intercept the flows prior to their entry to the site, then re-direct them around or through the site and convey them to the same locations where they exit the site under existing conditions as shown in Figure 5.17-16. These three channels also collect some of the onsite flows as they pass through the site. The remainder of the onsite runoff will be collected in the Central and Southeast Channels. Three of the channels will outlet to end diffusers and one will outlet directly into an existing dry wash. The other collector channel (Central Channel) actually connects to another channel (North Channel) and thus there is no separate discharge provision made for this channel. There is an increase in runoff to the West Channel in the proposed conditions that can be attributed to an increase in the tributary area of 1,800 acres. The majority of the area being added to the West Channel is from an area previously tributary to the North Channel, Central Channel, and Southeast Channel. As a result, the proposed flows at the North Channel outlet and Southeast Channel outlet have decreased, as noted in Table 5.17-9.

Table 5.17-9 Existing Peak Drainage Flow Rate vs. Proposed Channel Design Total Flow Rate for 100-Year Event

Watercourse	Existing Flow Rate at Outlet of the Site (cfs)	Proposed Channel Design Total Flow Rate (cfs)
North Channel	7,748	6,727
Central Channel	3,237 ^{1.}	1,881 ^{1.}
Southeast Channel	1,593	1,036
South Channel	398	241
West Channel	4,233	6,061
^{1.} Flow in Central Channel in both existing and proposed conditions outlet into the North Channel and is included in the North Channel flow rate. It is shown only to illustrate the amount of flow in the channel and how the distribution of flow has been changed in the proposed condition, and should not be added to the total flow exiting the site.		

A comprehensive system of controls including operation phase BMPs will be used to manage stormwater runoff and to control erosion and sedimentation. The controls will be detailed in the DESCP and SWPPP documents prepared for the Project and are summarized below:

- Initially grading will only proceed in those areas needed for site construction and operation of the facility. Areas that are undisturbed will remain so and be clearly marked so that existing vegetation will remain in-place.
- Gravel berms will be used at the bases of slopes or check structures to control sediment loss and erosion. As indicated for the channel diversion structure, rip-rap or other erosion control measures will be used to minimize scour and erosion.
- Roads and paved areas will be kept free of dust, dirt, and visible soil materials. An entrance/outlet tire wash will be developed. Water will be used to control dust but water application will be minimized to control runoff.
- BMPs will be applied as soon as possible when erosion is evident and damaged areas will be repaired. Temporary erosion control measures will be implemented as needed to control erosion. Temporary sediment control materials will be maintained onsite throughout the term of the project for responding to unforeseen conditions as they arise.

With the implementation of BMPs, it is anticipated that the Project will effectively provide a management program to minimize impacts to drainage and/or control flood conditions.

5.17.3.3 Cumulative Impacts

To evaluate the collective water supply requirements, Project documents (in almost all cases, the Plans of Development [POD] submitted to BLM), were reviewed to determine the project schedules and

operational and construction water supply requirements and the source of the supply (Figure 5.17-20). Project water supply needs vary between photovoltaic projects at the low end to gas-fired combined-cycle power plants projects at the high end. Table 5.17-10 provides a summary of the individual water use for each project and provides an assessment of totally yearly and cumulative use over a period of 30 years beginning in 2013, the operational date for the initial unit of the four-unit BSPP. In some instances there was insufficient detail within the POD to determine construction or operational volumes. In these circumstances, projects with similar technology and size (i.e., photovoltaic) were used to estimate water use.

In total, these projects would use between about 1,700 and 4,800 afy beginning in 2013 through 2043. Peak water use would be during the years between 2014 and 2015 when many projects are under construction and operation of the proposed Blythe Energy Project II has begun. When all the projects are operational in 2016, operational need is about 4,500 afy. The cumulative volume of water usage over the period of analysis for all the renewable projects is about 140,000 af over about 30 years from initial start of the BSPP; of this volume, the total Project use is about 13 percent of the total usage. The cumulative usage from the projects represents about three percent of the reported recoverable storage (5,000,000 af) in the Palo Verde Mesa Groundwater Basin.

Following the same approach as provided above, an analysis of the cumulative impacts on the water table of the Palo Verde Mesa Groundwater Basin was done by adding the proposed water usages for the projects together and evaluating their impact using the following equation:

$$V = A \cdot S \cdot dh \text{ (Fetter 1988)}$$

Where:

V = Volume of water released or taken into storage (i.e., the cumulative change for a period of about 30 years, or the construction and operational period of the BSPP) (Table 5.17-10).

A = Area of the regional aquifer (226,000 acres)

S = aquifer storage (0.05 to 0.20)

dh = change in regional water level

Solving the equation for dh, and using a range in storativity of 0.20 to 0.05 yields a change in the water level within the Palo Verde Mesa Groundwater Basin ranging from about 3 to 12 inches in 2014 to 38 inches to 152 inches in 2043. Given the saturated thickness of the alluvial deposits of about 500 feet or more in the area, these changes are not significant.

5.17.4 Mitigation Measures

The BSPP would not have significant adverse impacts on water resources. To ensure that no significant adverse effects to water quality or supply are caused by the proposed Project pumping for operational supply, the following mitigation measures are proposed for construction and operation.

Water quality will be protected through implementation of the SWPPP and DESCP for construction and operations. It is important to note that in order to keep water use as low as practicable, the Project will attempt to recycle the process makeup water for a savings of about 25 percent of the annual total consumptive use.

5.17.4.1 Construction

- WTR-1** Prior to beginning any clearing, grading or excavation activities associated with construction of the project, the project owner will develop and implement an approved construction-phase SWPPP as required under the General Storm Water Construction Activity Permit, as well as a DESCP that meets CEC requirements.
- WTR-2** The project owner will obtain and comply with final WDRs issued by the Colorado River Basin RWQCB for the Project's proposed wastewater discharge.
- WTR-3** The project owner will obtain and comply with permits for construction of a septic system prior to construction of the plant. A copy of the permits will be provided to the CEC Compliance Project Manager 60 days prior to the beginning of construction activities.
- WTR-4** The project owner will revise and reclassify well permits from Riverside County for existing well(s) that will be used to monitor groundwater or provide water supply to the project.

5.17.4.2 Operation

- WTR-5** Prior to commercial operation, the project owner, as required under the General Industrial Activity Storm Water Permit, will develop and implement an operations phase SWPPP.
- WTR-6** The project owner will record on a monthly basis the amount of groundwater pumped by the project. This information will be supplied to the CEC, Riverside County, and other interested agencies including a Notice of Extraction and Diversion of Water consistent with the SWRCB requirements (Water Code Sections 4999 et seq.).
- WTR-7** The project owner will measure groundwater levels in the onsite wells on a monthly basis for the first six months following the project start up and thereafter on a quarterly basis and submit periodic monitoring reports to the CEC.
- WTR-8** The project owner proposes to provide offsets to the anticipated annual operational water usage through one of the following:
- Fallowing of agricultural land
 - Establishing or supporting tamarisk removal program
 - Offsetting water supply through a contract with the Colorado River Board of California for the Lower Colorado Water Supply Project.

5.17.5 References

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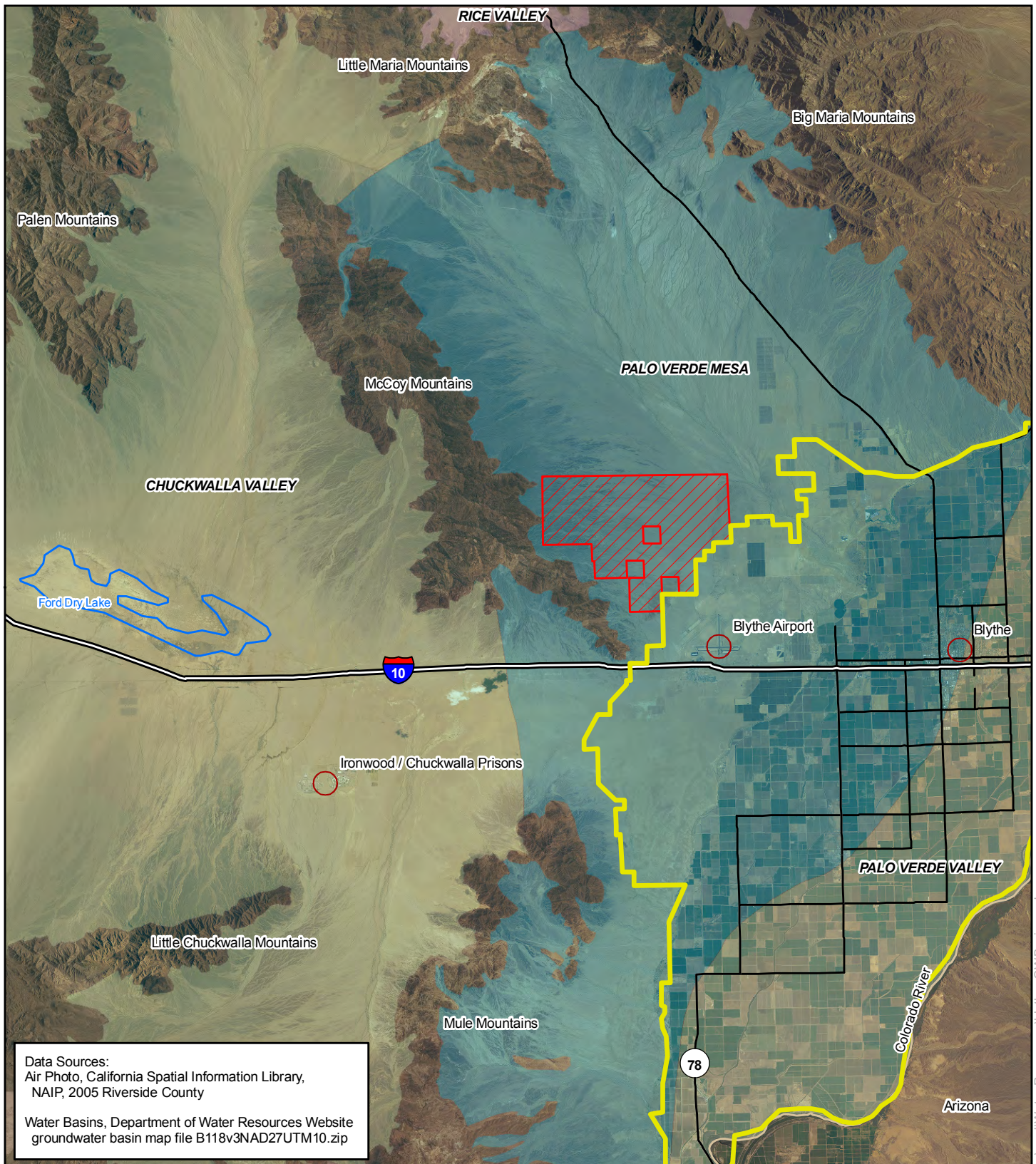
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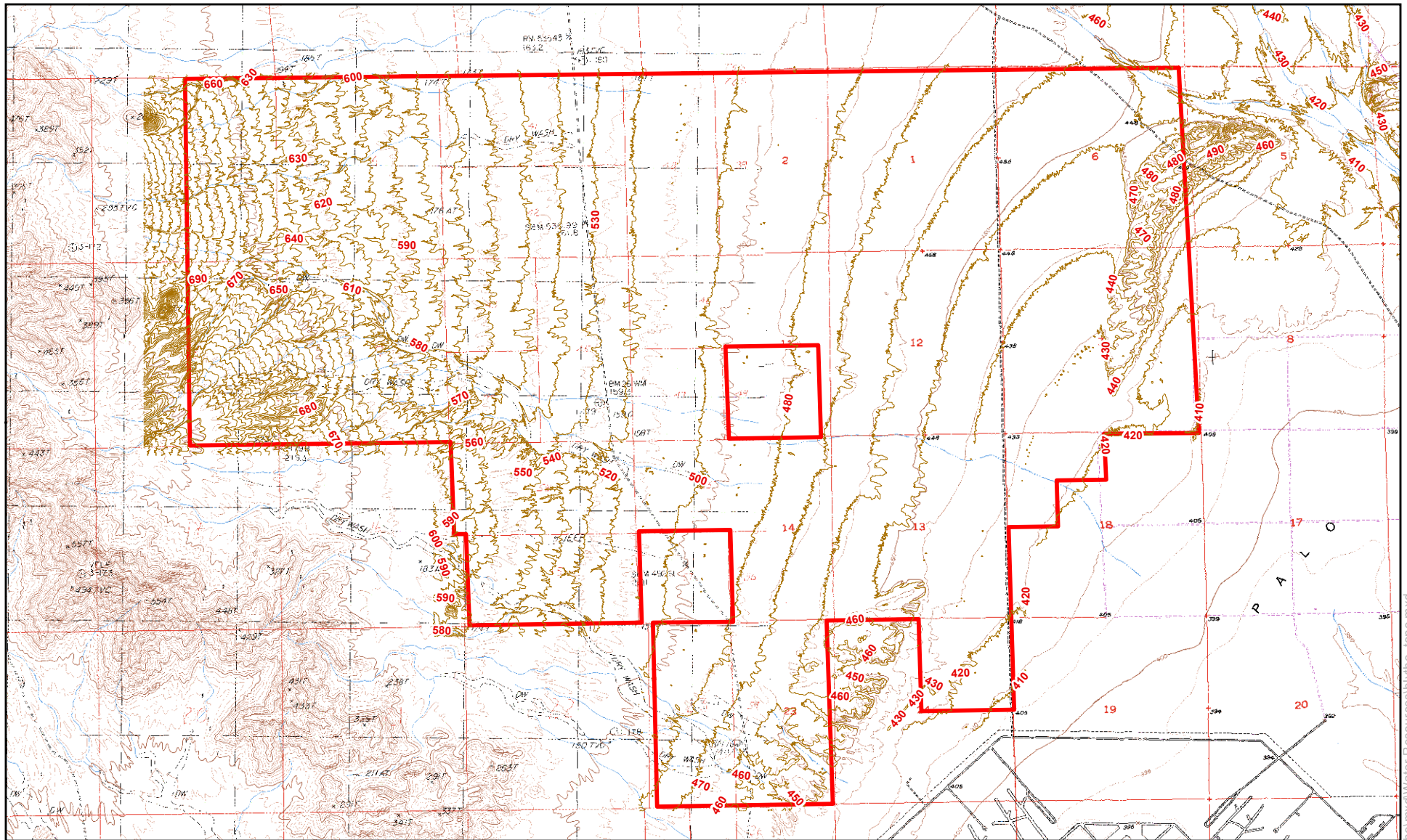


Data Sources:
 Air Photo, California Spatial Information Library,
 NAIP, 2005 Riverside County

Water Basins, Department of Water Resources Website
 groundwater basin map file B118v3NAD27UTM10.zip

<p>Map Location</p>	<p>Legend</p> <ul style="list-style-type: none"> Project Right-of-Way Geographic/Cultural Area of Interest Freeway Highway / Major Road Palo Verde Mesa Groundwater Basin (Adjacent basins shown with different colors) Palo Verde Irrigation District Boundary <p>1 in = 4 miles</p> <p>0 4 8 Miles</p>	<p>Blythe Solar Power Project</p> <p>Figure 5.17-1 Regional Groundwater Basins</p>	 <p>Project: 12944-002 Date: August 2009</p>
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- Legend**
- Project Right-of-Way
 - Freeway
 - 540- Topographic Contour (10-ft interval) feet msl

Data Sources:
Topographic Contours from Towill 2009

USGS 7.5 Minute Quadrangles,
McCoy Peak and McCoy Wash, CA

1 inch = 4,000 feet

0 4,000 8,000 Feet



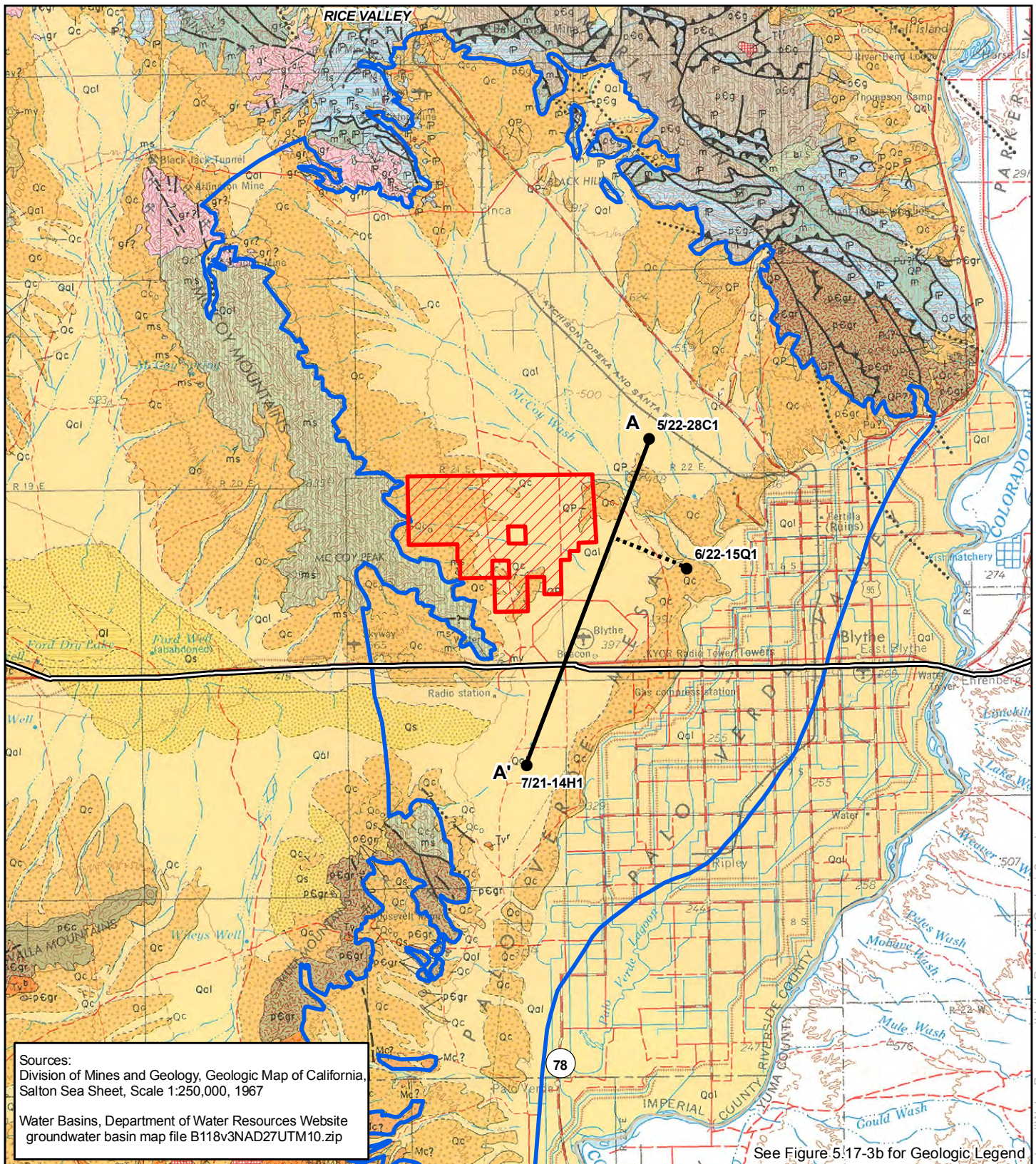
Blythe Solar Power Project

**Figure 5.17-2
Site Topography Map**



AECOM

Project: 12944-002
Date: August 2009



Sources:
 Division of Mines and Geology, Geologic Map of California,
 Salton Sea Sheet, Scale 1:250,000, 1967

Water Basins, Department of Water Resources Website
 groundwater basin map file B118v3NAD27UTM10.zip

See Figure 5.17-3b for Geologic Legend

<p>Map Location</p>	<p>Legend</p> <ul style="list-style-type: none"> Project Right-of-Way Freeway Palo Verde Mesa Groundwater Basin Boundary Cross-Section Line Groundwater Well <p>0 4 8 Miles</p>	<p>Blythe Solar Power Project</p> <p>Figure 5.17-3a Regional Geologic Map</p>	 <p>Project: 12944-002 Date: August 2009</p>
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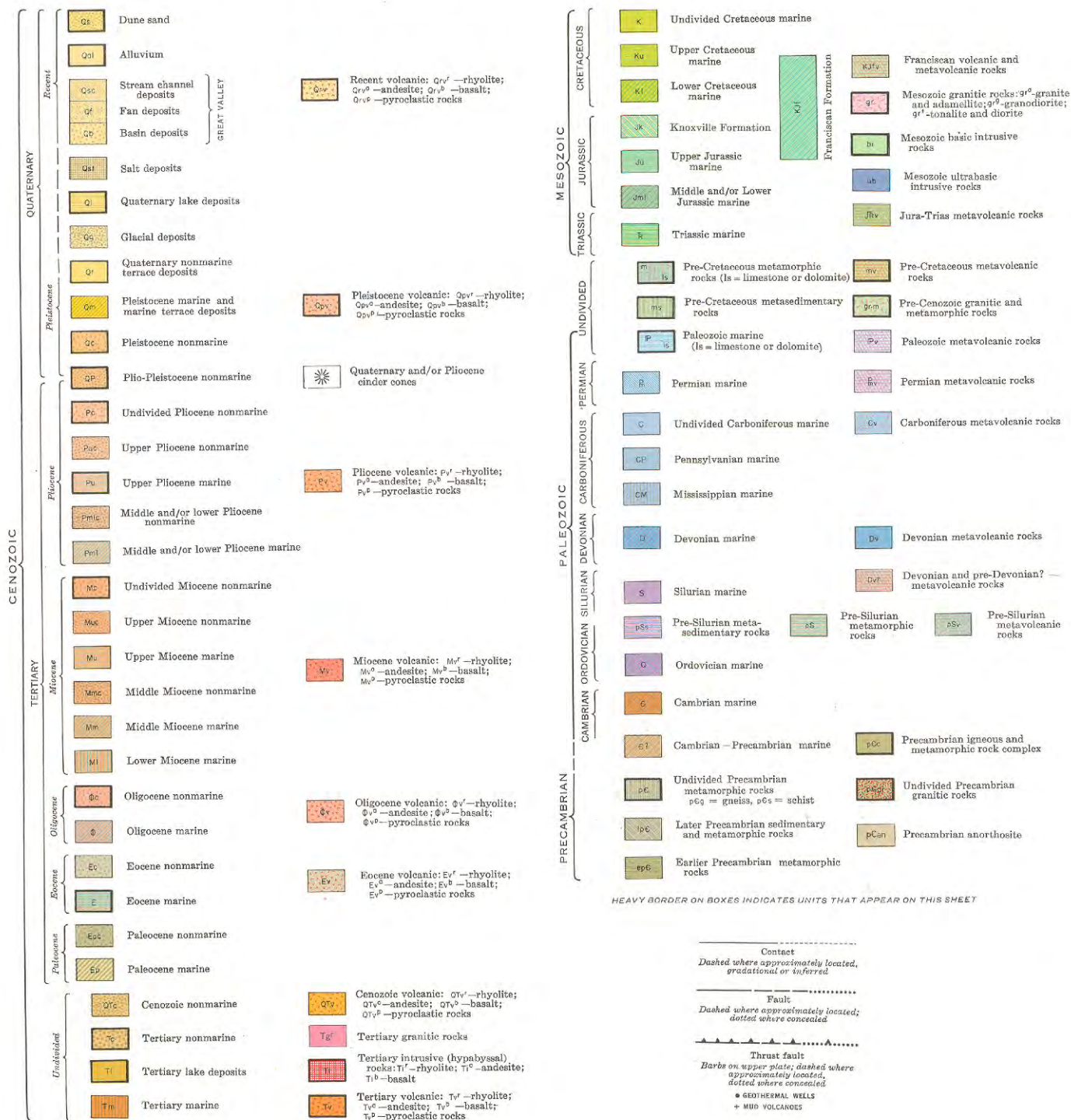
EXPLANATION

SEDIMENTARY AND METASEDIMENTARY ROCKS

IGNEOUS AND META-IGNEOUS ROCKS

SEDIMENTARY AND METASEDIMENTARY ROCKS

IGNEOUS AND META-IGNEOUS ROCKS



Map Location



Legend

Source: Geologic Map of California, Salton Sea Sheet, 1967



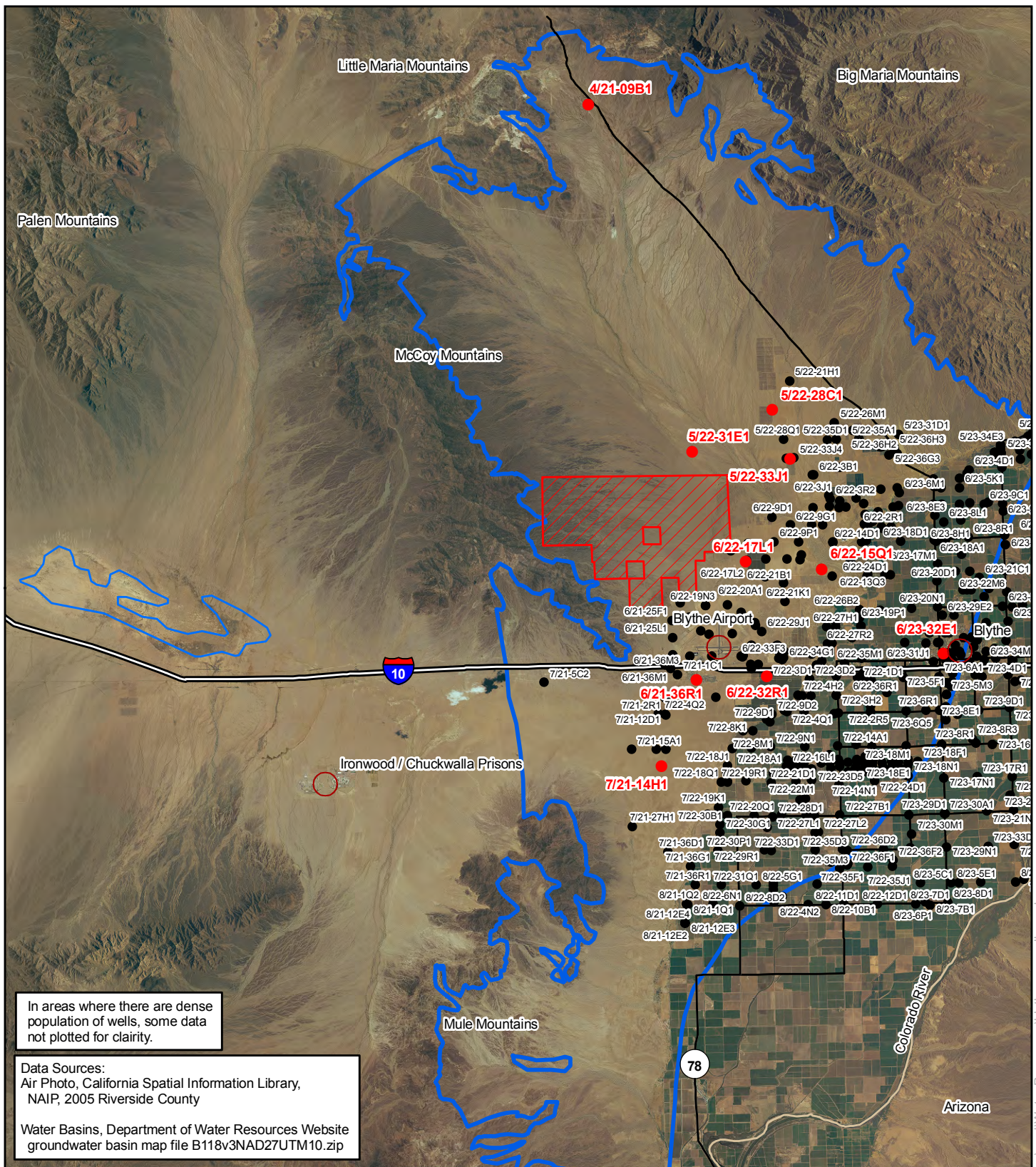
Blythe Solar Power Project

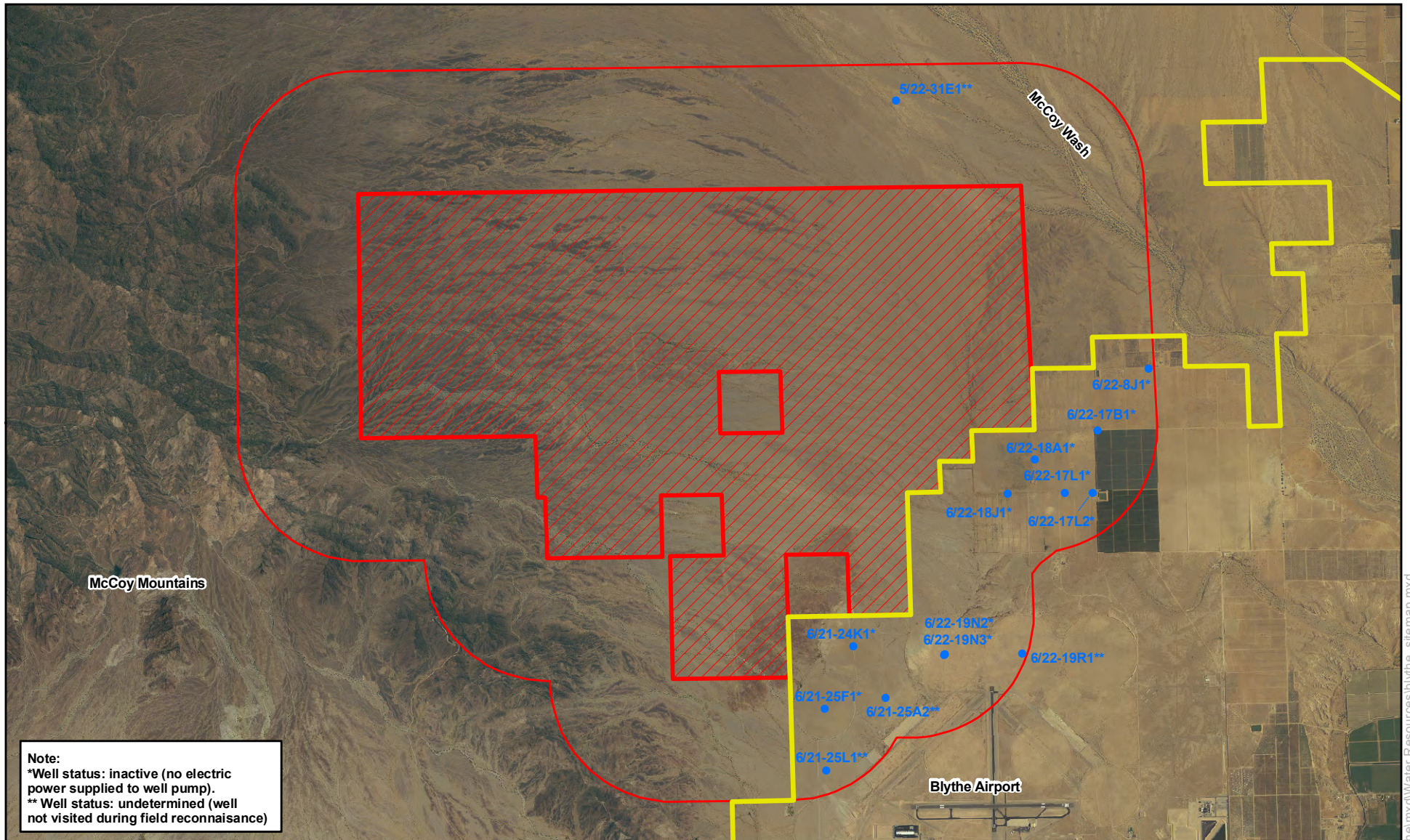
Figure 5.17-3b Regional Geologic Map Legend



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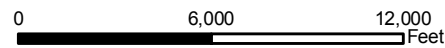
Project: 12944-002
Date: August 2009





- Legend**
- Project Right-of-Way
 - Groundwater Well Location based on Latitude and Longitude in USGS Database
 - One Mile Radius of Right-of-Way
 - Palo Verde Irrigation District Boundary

Data Sources:
 Air Photo, California Spatial Information Library,
 NAIP, 2005 Riverside County



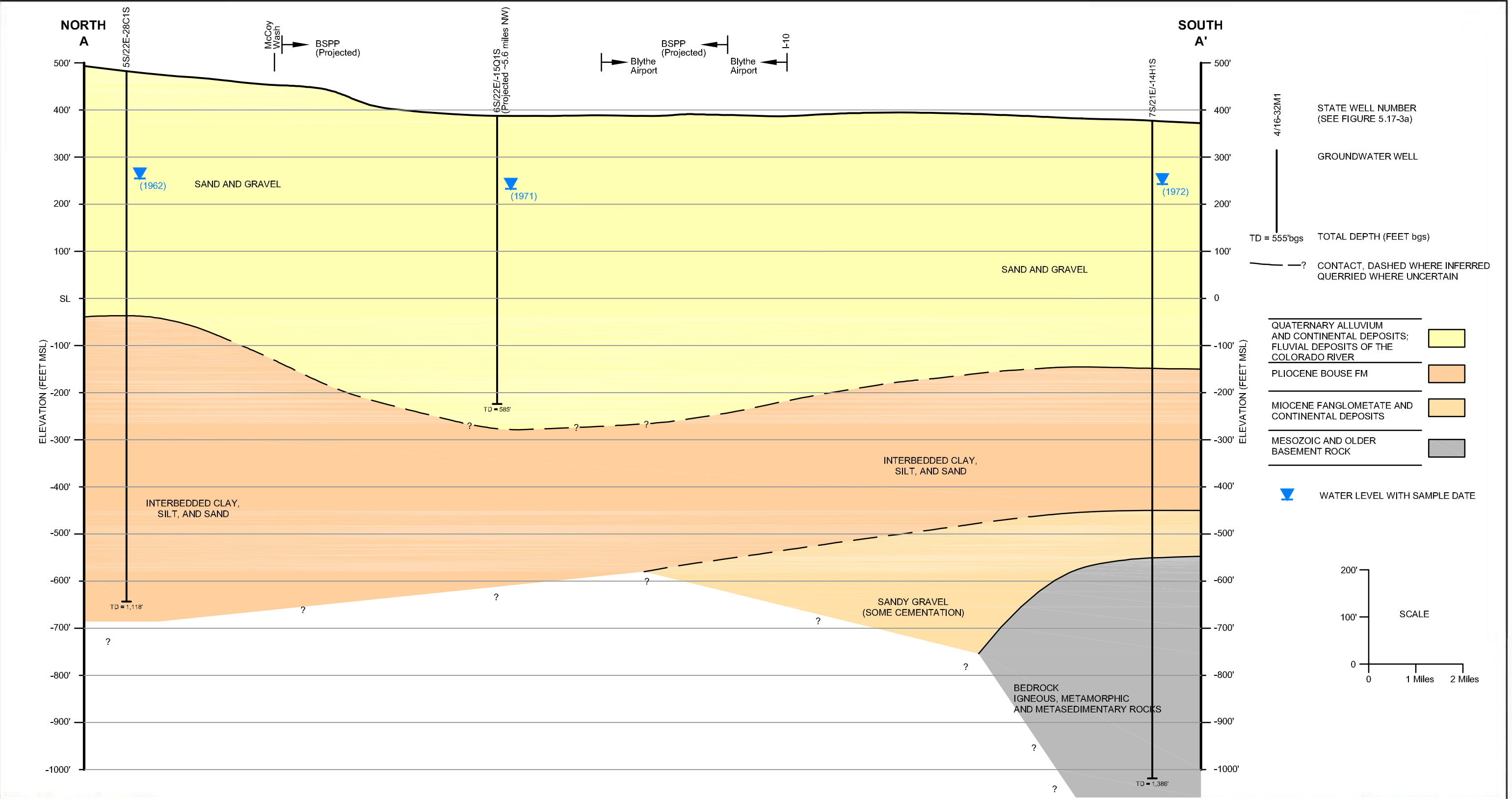
Blythe Solar Power Project

**Figure 5.17-4b
 Water Wells within
 One-Mile Radius of
 Project Site**



AECOM

Project: 12944-002
 Date: August 2009



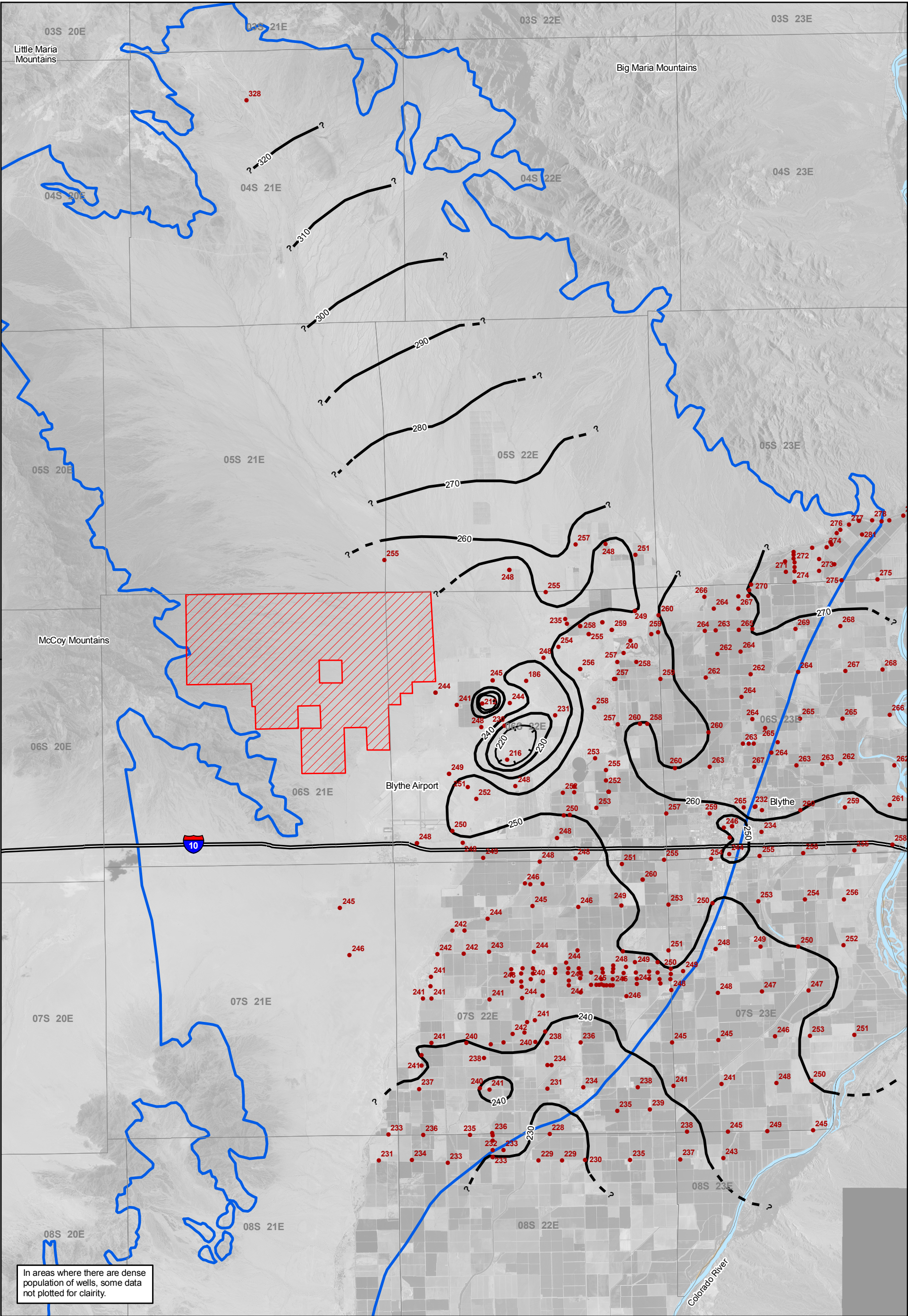
Blythe Solar Power Project

Figure 5.17-5
Cross-Section A-A'



AECOM

Project: 12944-002
Date: August 2009



Legend

- 1971 Groundwater Contour
Dashed where inferred,
Queried where uncertain
- 1971 Groundwater Elevation (feet, msl)
- Freeway
- Highway / Major Road
- Palo Verde Mesa
Groundwater Basin
Boundary
- Project Right-of-Way

0 2 4 Miles

Blythe Solar Power Project

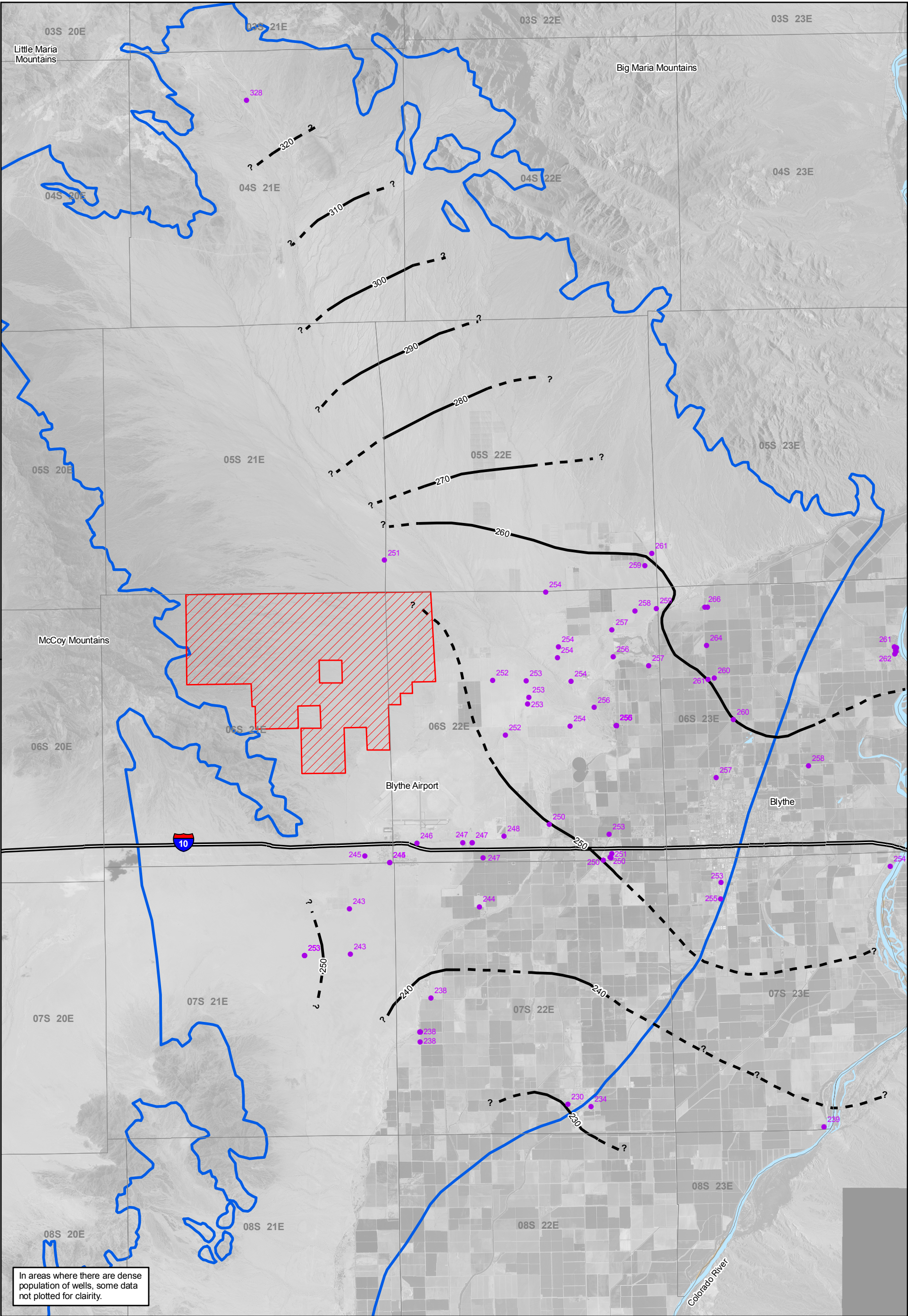
Figure 5.17-6
1971 Water Level Contour Map

Source:

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009



Legend

- 2000 Groundwater Contour
Dashed where inferred,
Queried where uncertain
- 2000 Groundwater Elevation (feet, msl)
- Freeway
- Highway / Major Road
- Palo Verde Mesa
Groundwater Basin
Boundary
- Project Right-of-Way

0 2 4 Miles

Blythe Solar Power Project

Figure 5.17-7
2000 Water Level Contour Map

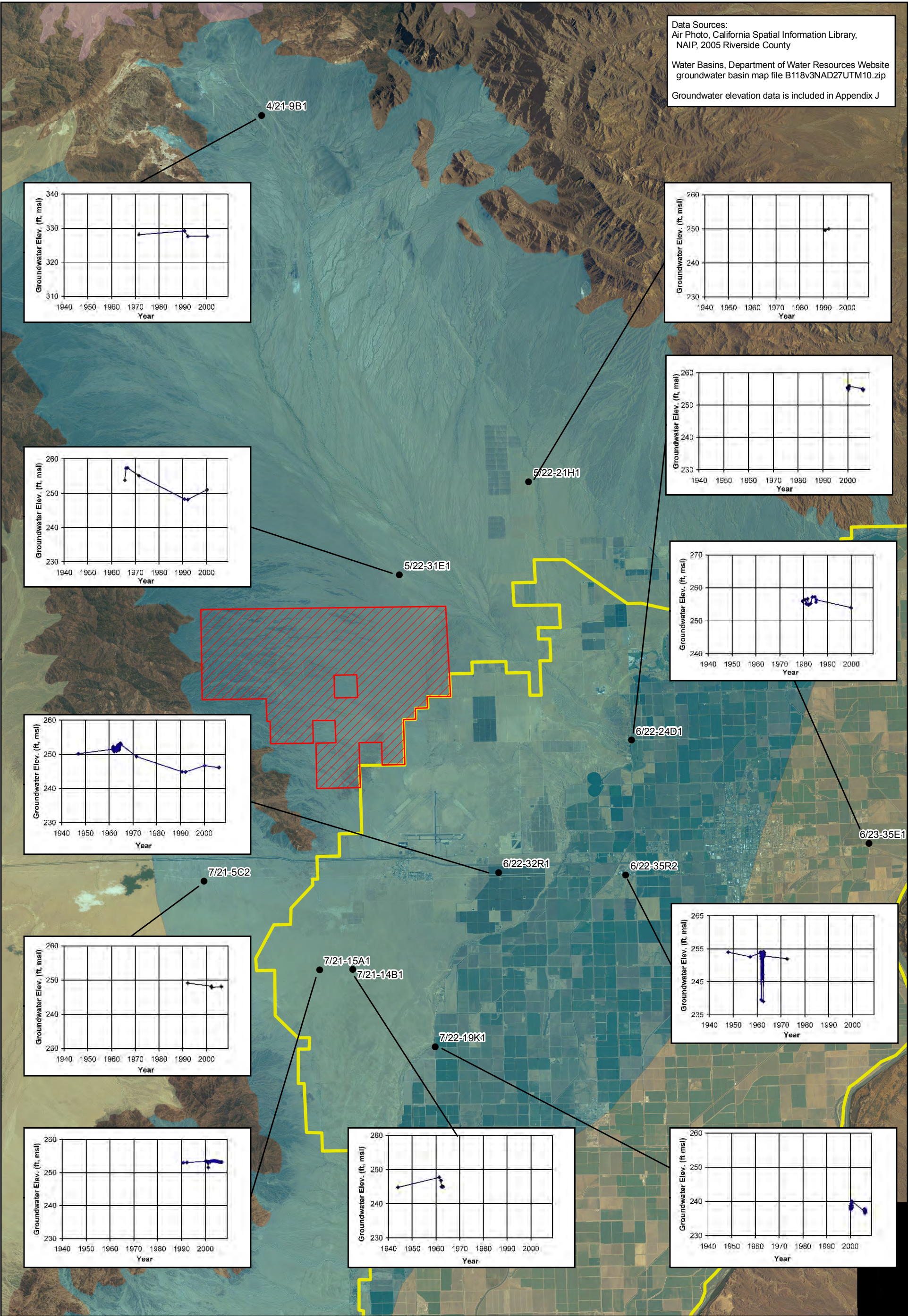
Source:

Solar Millennium

AECOM

Project: 12944-002
Date: August 2009

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Data Sources:
Air Photo, California Spatial Information Library,
NAIP, 2005 Riverside County

Water Basins, Department of Water Resources Website
groundwater basin map file B118v3NAD27UTM10.zip

Groundwater elevation data is included in Appendix J

Map Location

Legend

- Groundwater Well Location
- Project Right-of-Way
- Freeway
- Highway / Major Road
- Palo Verde Mesa Groundwater Basin (Adjacent basins shown with different colors)
- Palo Verde Irrigation District Boundary

1 in = 2 miles

0 6,000 12,000 Feet

Source:

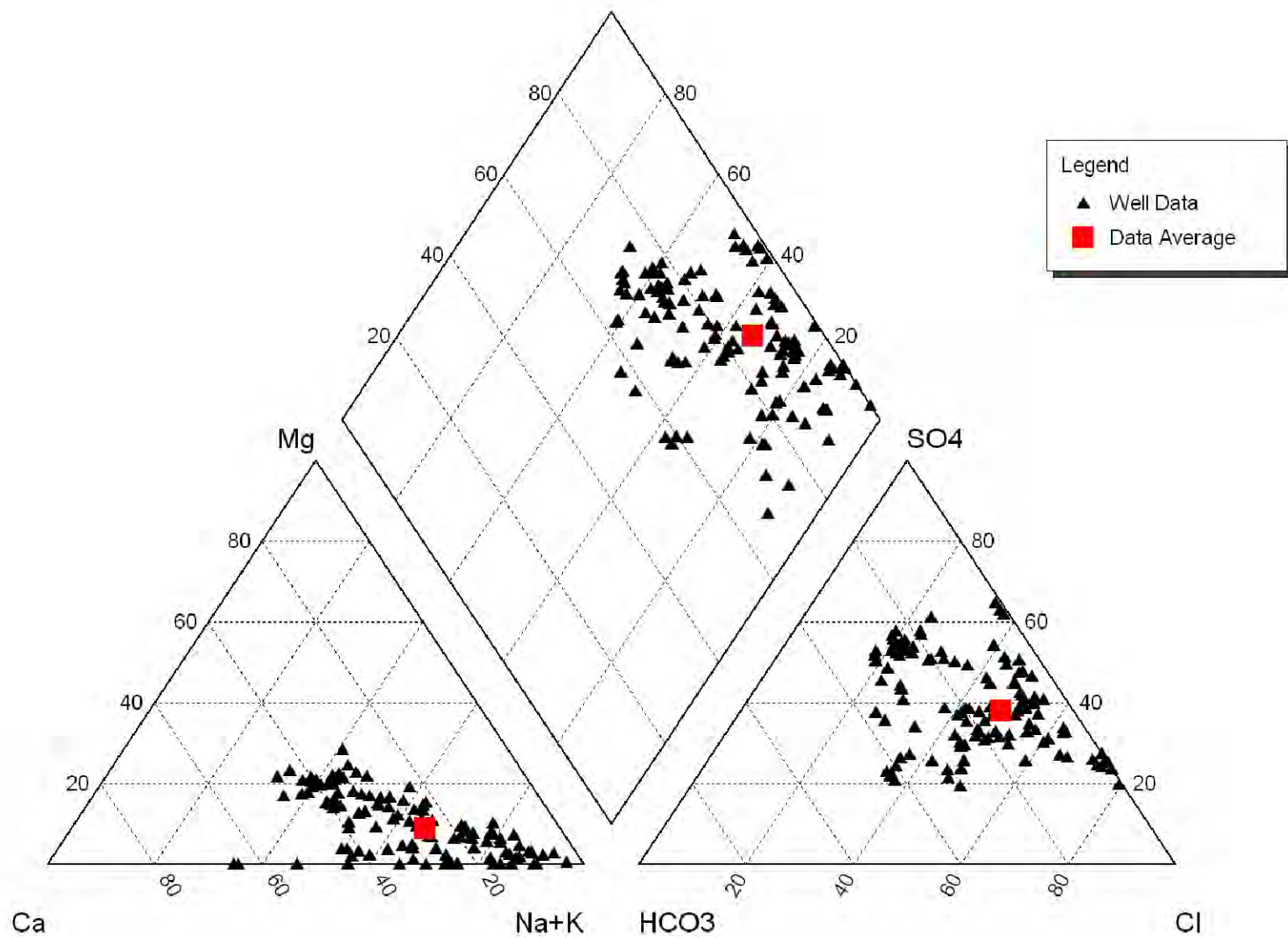
Blythe Solar Power Project

Figure 5.17-8
Basin Wide Hydrographs

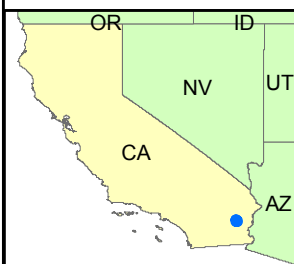
Solar Millennium

AECOM

Project: 12944-002
Date: August 2009



Project Location



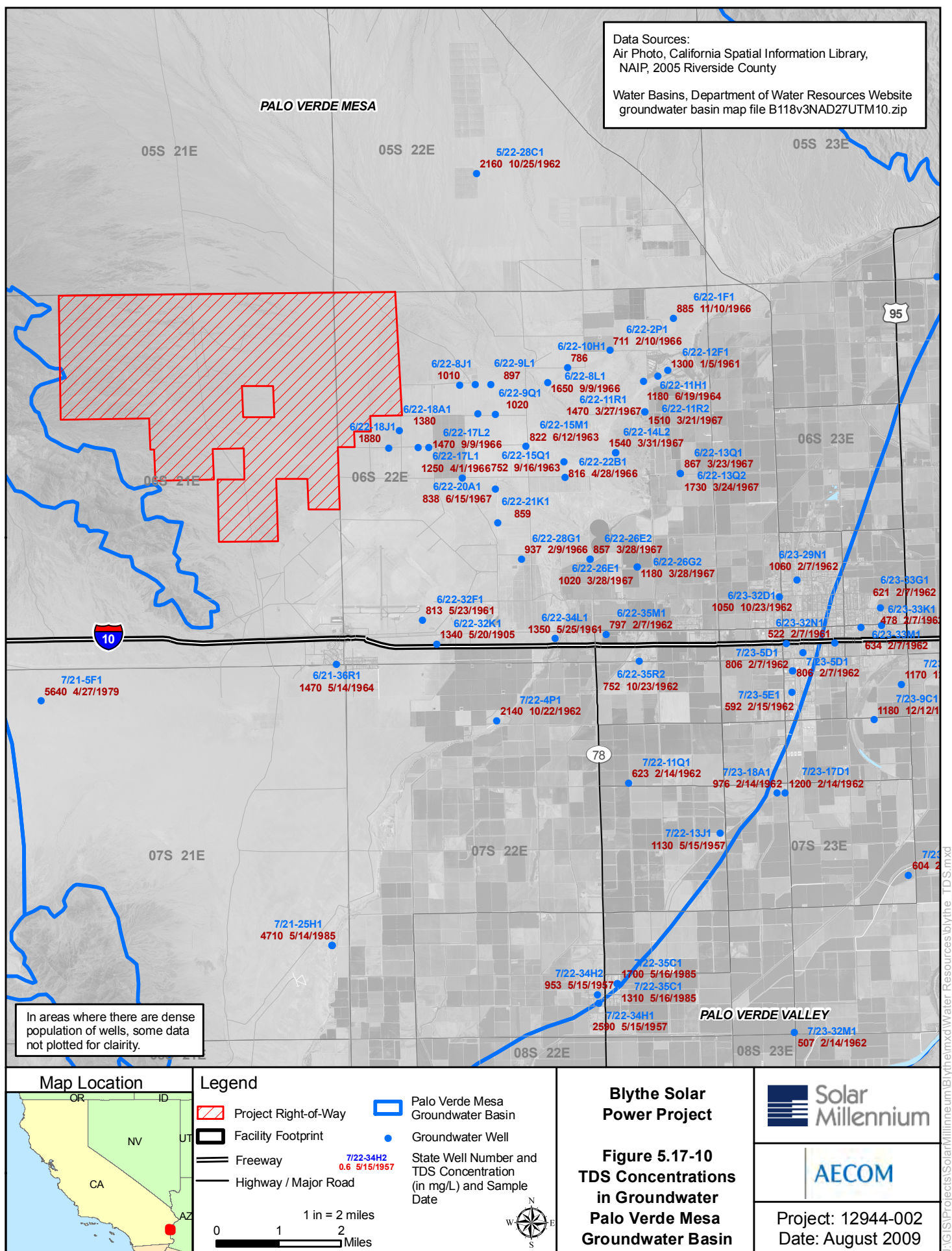
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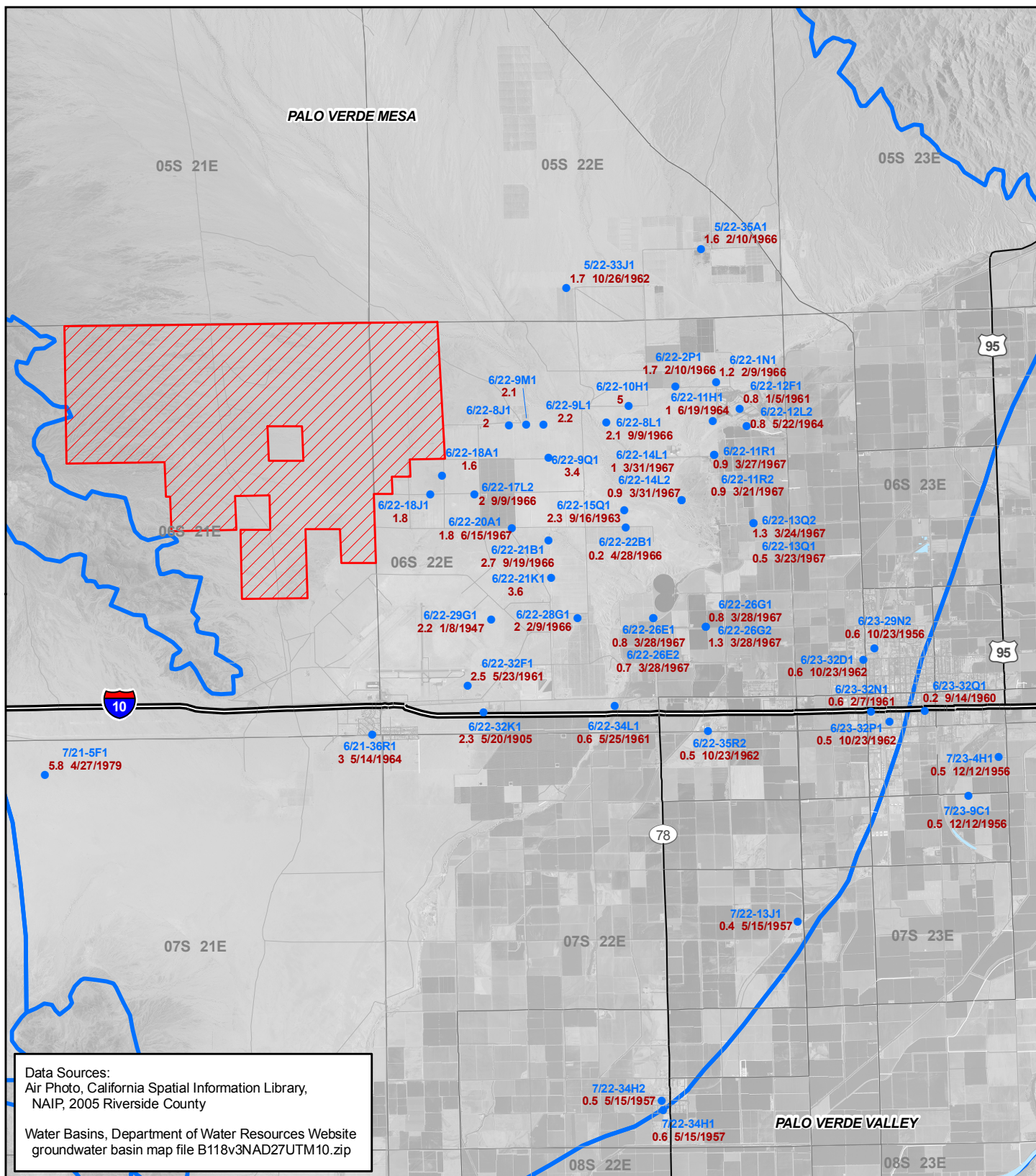
**Figure 5.17-9
Blythe Water Quality
Piper Plot**



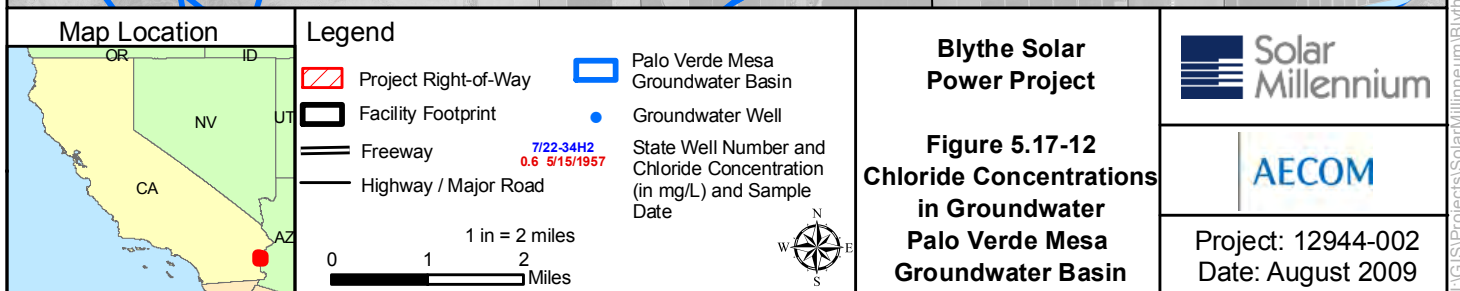
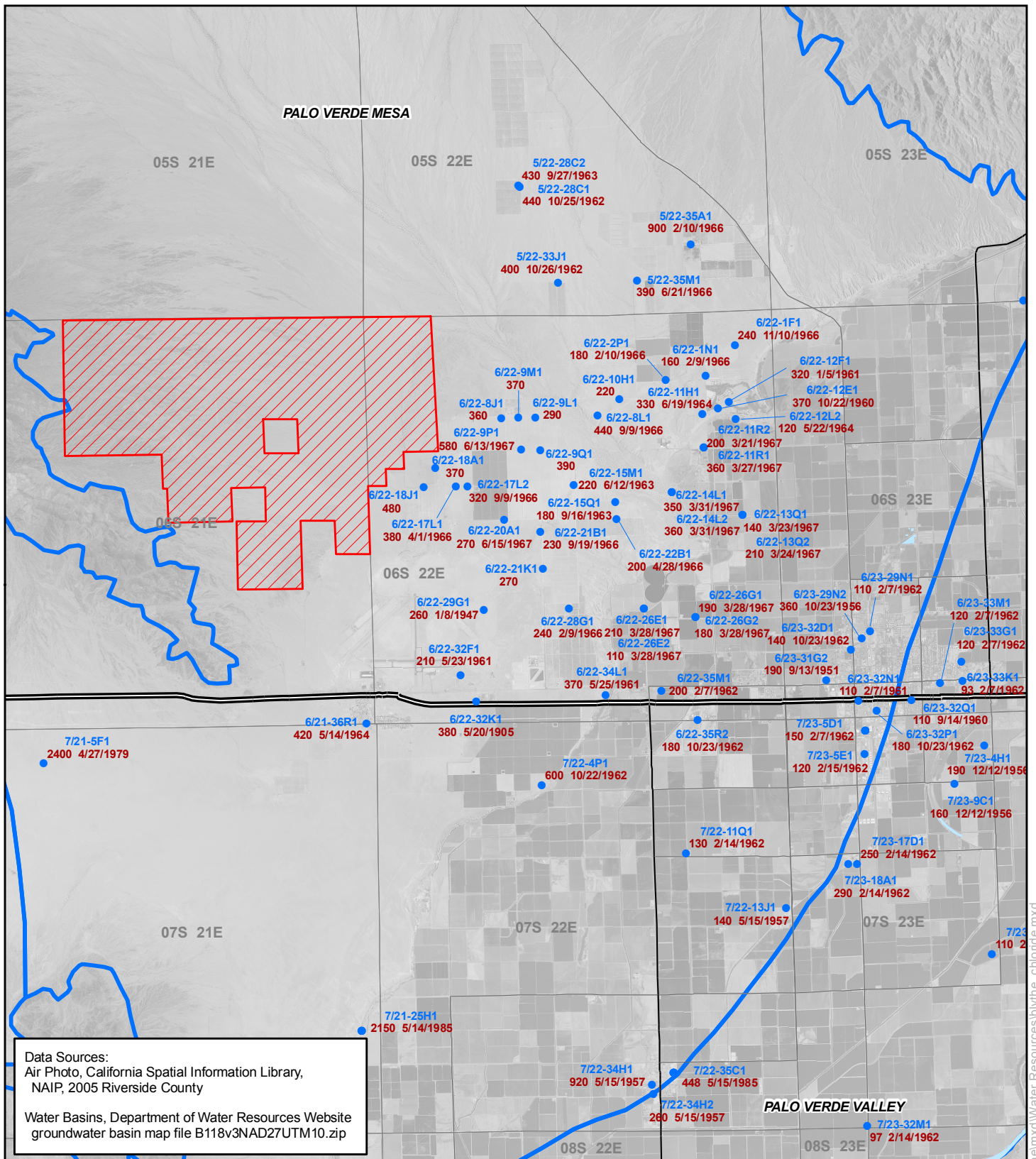
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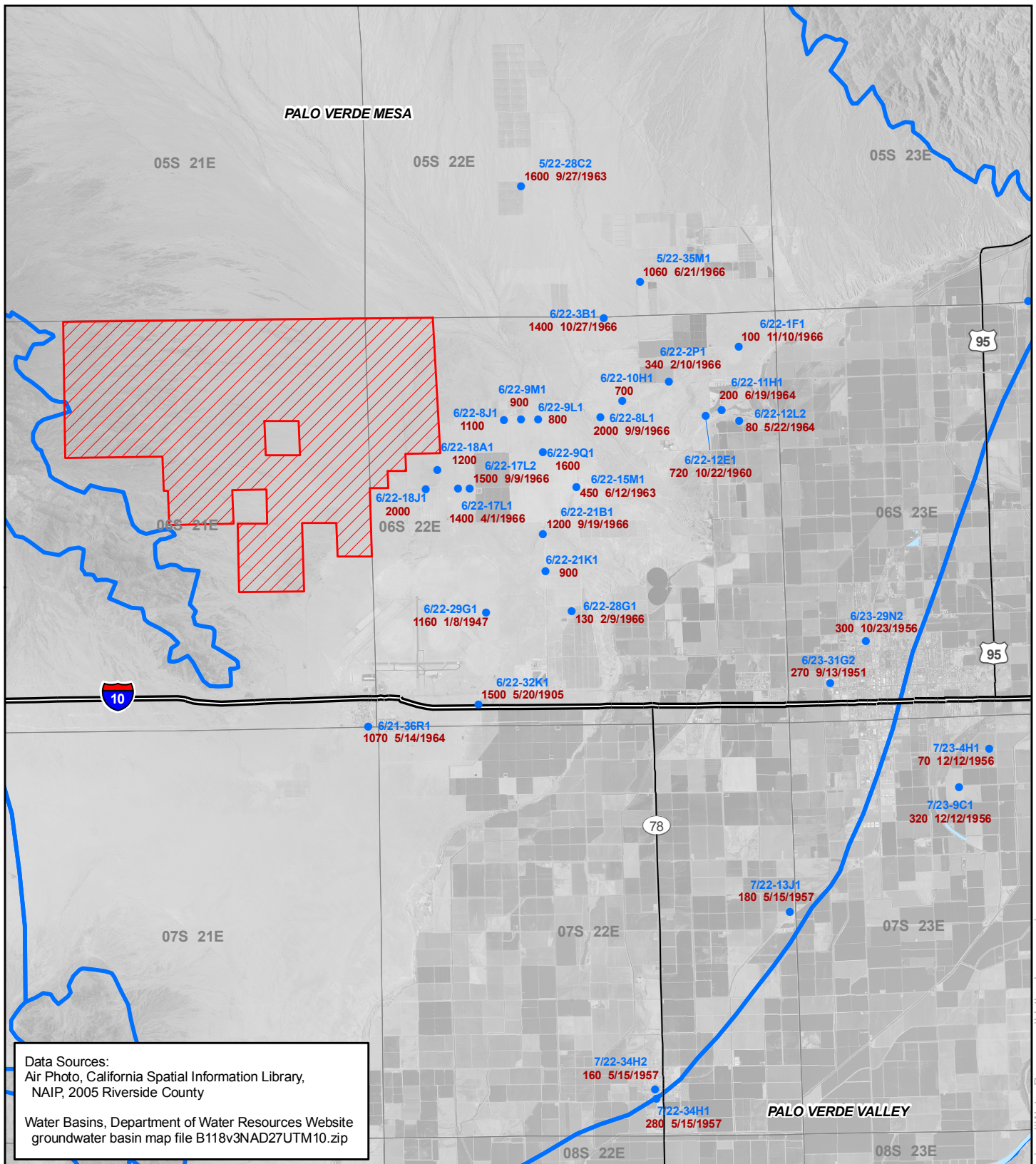
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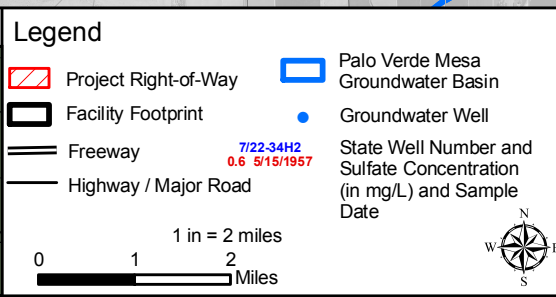
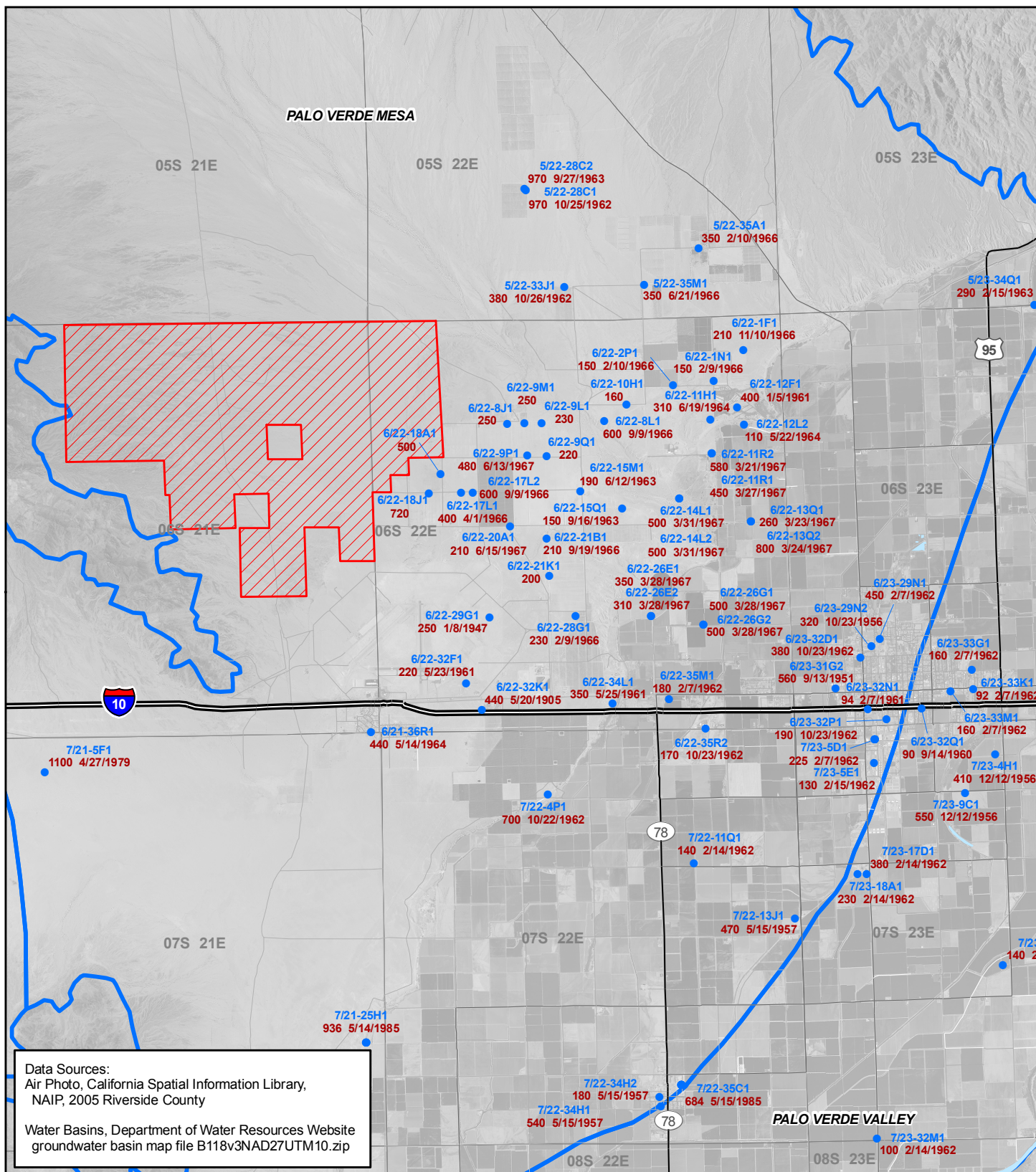


<p>Map Location</p>	<p>Legend</p> <ul style="list-style-type: none"> Project Right-of-Way Facility Footprint Freeway Highway / Major Road Palo Verde Mesa Groundwater Basin Groundwater Well State Well Number and Fluoride Concentration (in mg/L) and Sample Date <p>Scale: 1 in = 2 miles</p> <p>North Arrow</p>	<p>Blythe Solar Power Project</p> <p>Figure 5.17-11 Fluoride Concentrations in Groundwater Palo Verde Mesa Groundwater Basin</p>	<p>Solar Millennium</p> <p>AECOM</p> <p>Project: 12944-002 Date: August 2009</p>
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<p>Map Location</p>	<p>Legend</p> <ul style="list-style-type: none"> Project Right-of-Way Facility Footprint Freeway Highway / Major Road Palo Verde Mesa Groundwater Basin ● Groundwater Well ● State Well Number and Boron Concentration (in mg/L) and Sample Date <p>1 in = 2 miles</p> <p>0 1 2 Miles</p>	<p>Blythe Solar Power Project</p> <p>Figure 5.17-13 Boron Concentrations in Groundwater Palo Verde Mesa Groundwater Basin</p>	<p> Solar Millennium</p> <p> AECOM</p> <p>Project: 12944-002 Date: August 2009</p>
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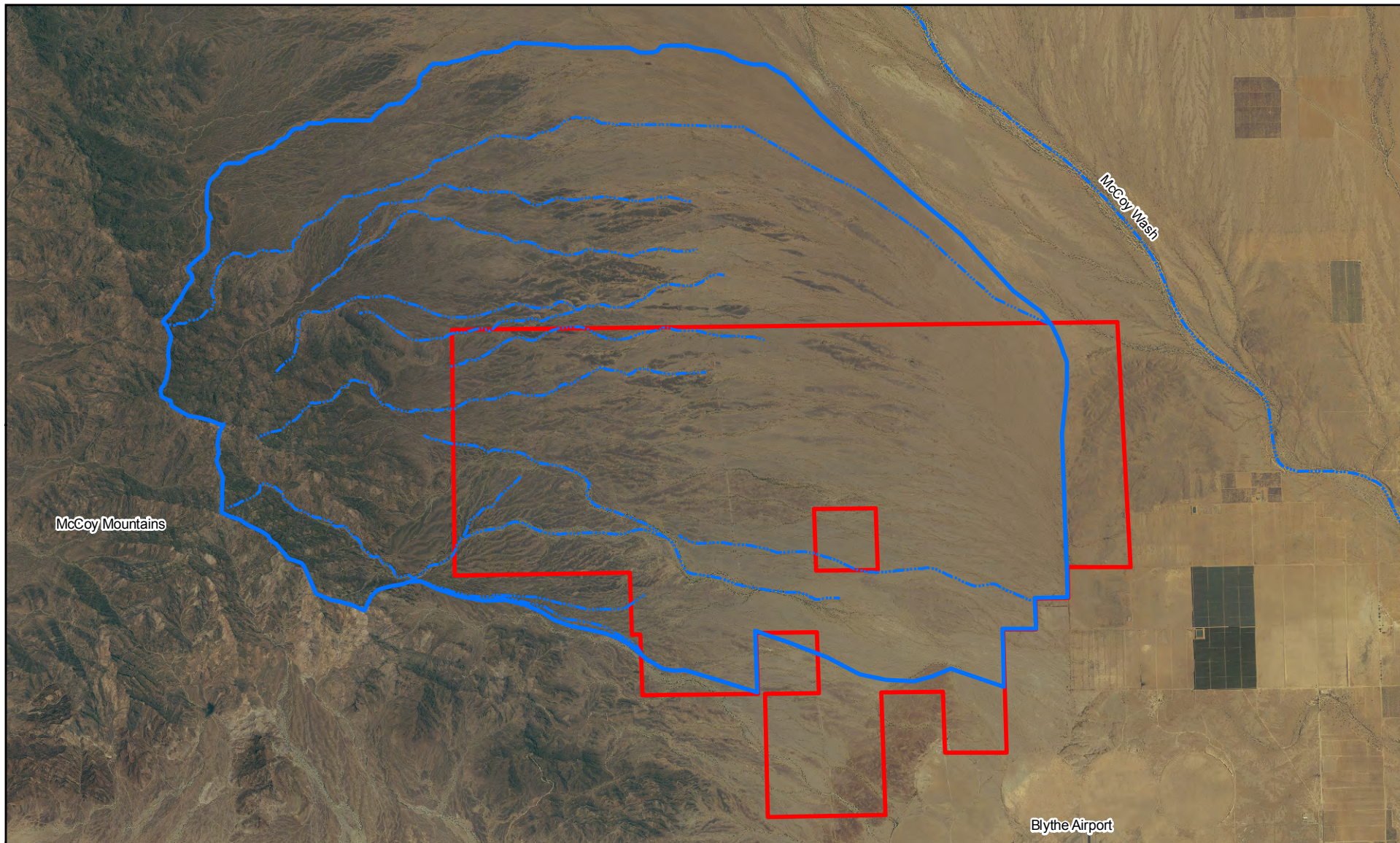


Blythe Solar Power Project

Figure 5.17-14
Sulfate Concentrations
in Groundwater
Palo Verde Mesa
Groundwater Basin

Project: 12944-002
 Date: August 2009

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- Legend**
- Project Right-of-Way
 - Watershed Boundary
 - Existing Surface Water Flow Paths

Data Sources:
 Air Photo, California Spatial Information Library,
 NAIP, 2005 Riverside County
 Blythe Solar Power Project Drainage Report
 (AECOM, 2009) Appendix L

0 6,000 12,000 Feet



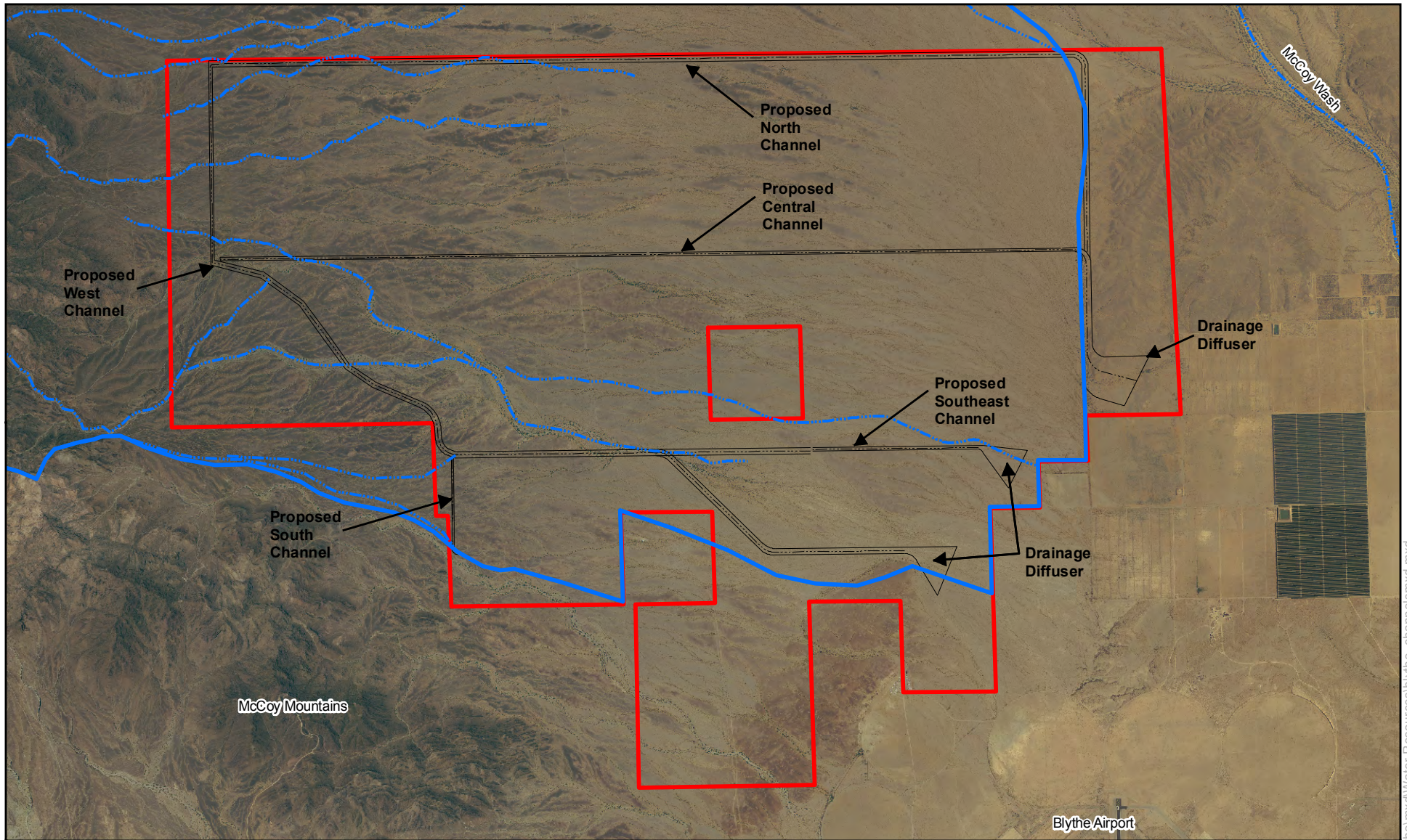
Blythe Solar Power Project

Figure 5.17-15
Existing Drainage and
Surface Water Flow Paths



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Project: 12944-002
 Date: August 2009



- Legend**
- Project Right-of-Way
 - Watershed Boundary
 - Existing Surface Water Flow Paths

Data Sources:
 Air Photo, California Spatial Information Library,
 NAIP, 2005 Riverside County
 Blythe Solar Power Project Drainage Report
 (AECOM, 2009) Appendix L

0 6,000



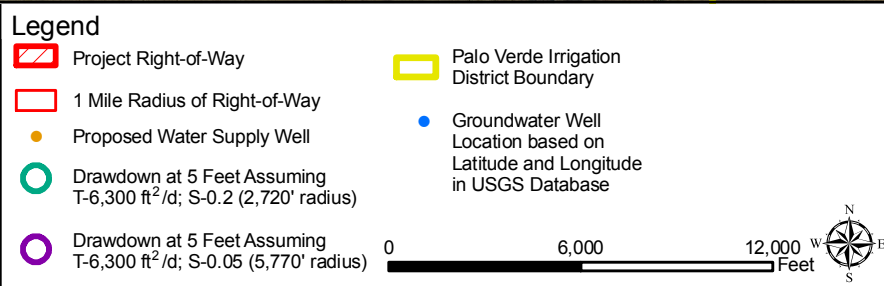
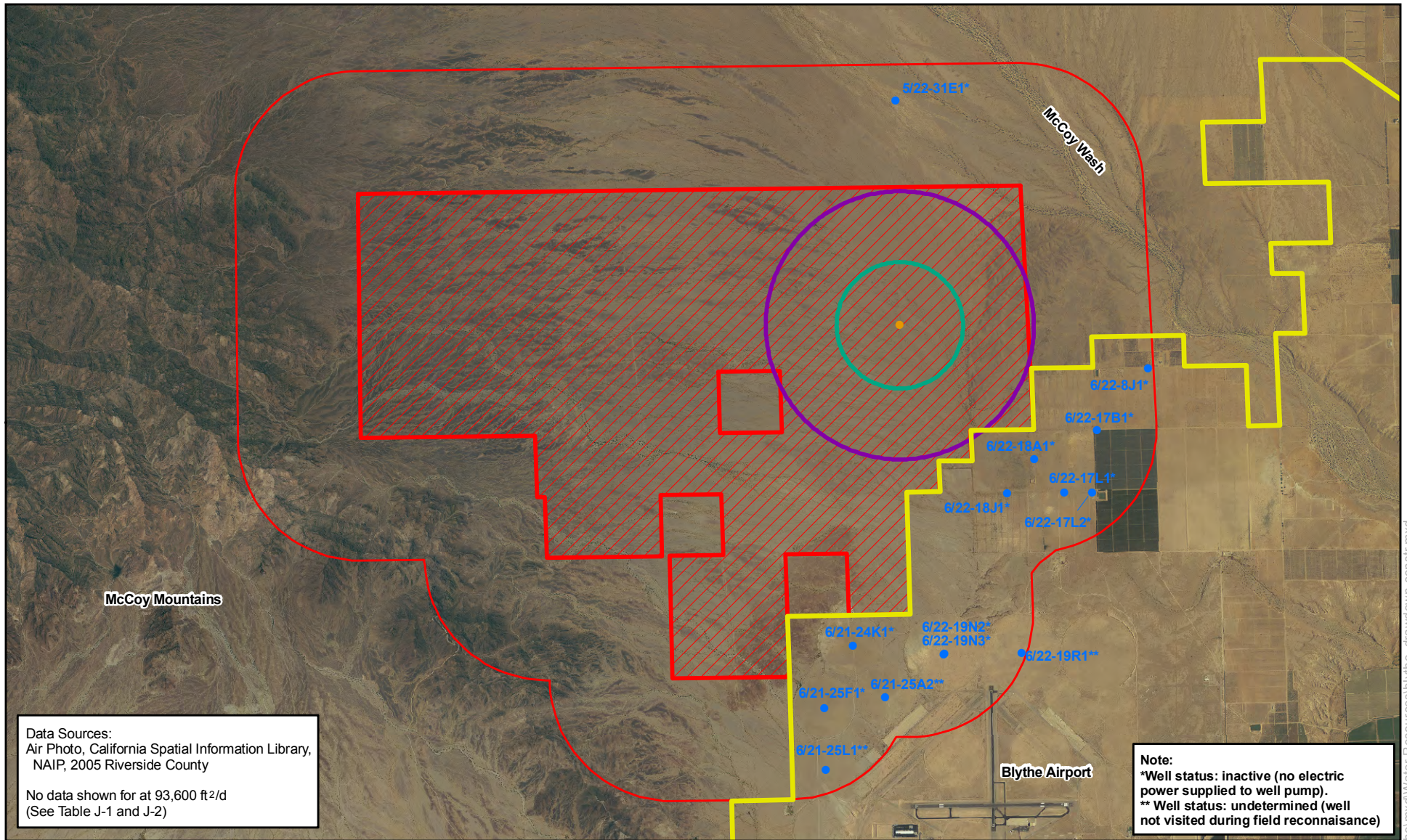
Blythe Solar Power Project

Figure 5.17-16 Proposed Channel Realignments




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Project: 12944-002
 Date: August 2009



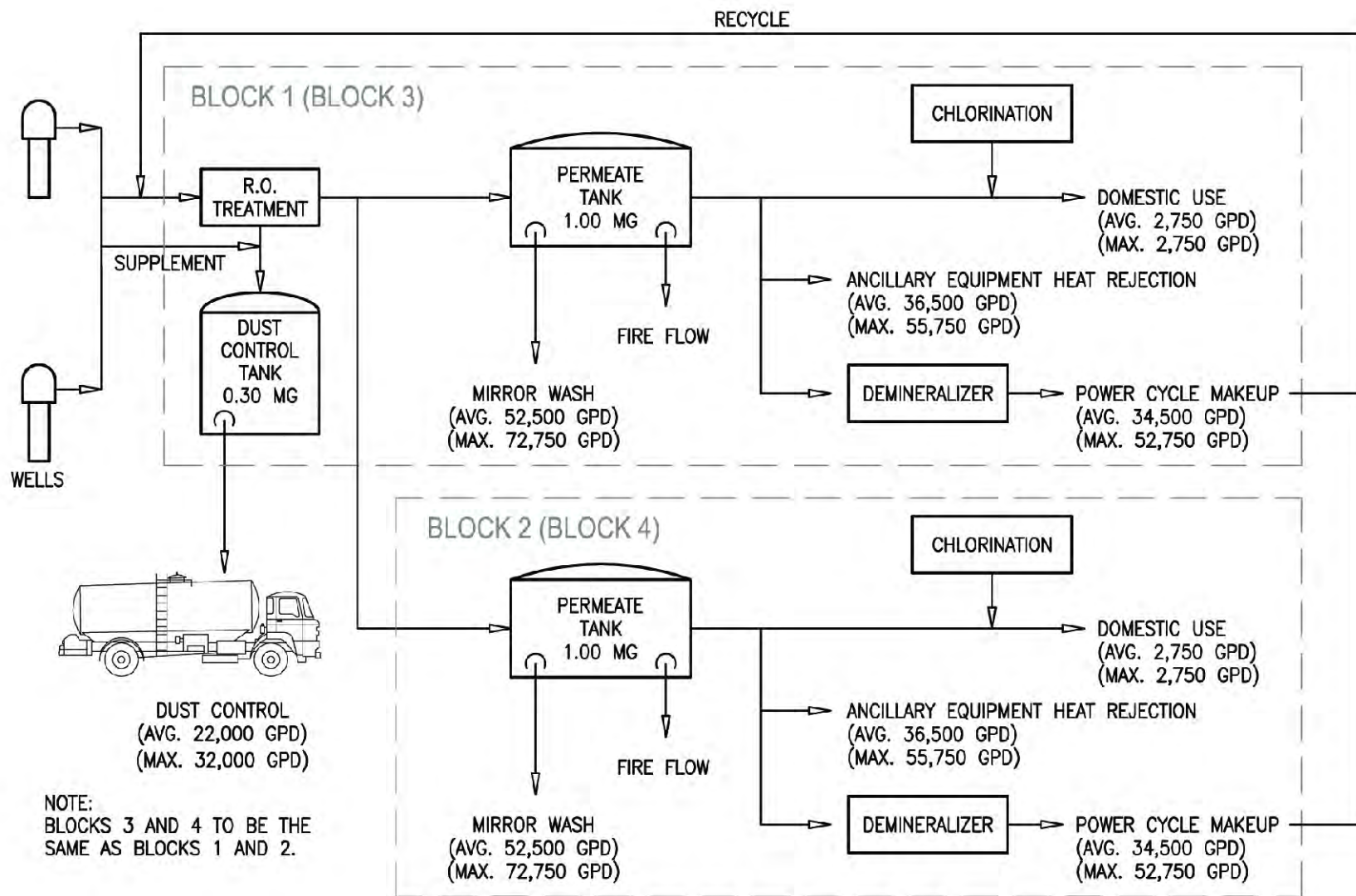
Blythe Solar Power Project

Figure 5.17-17
Predicted Drawdown During Construction Period
(Storage Coefficient of 0.05 and 0.20)

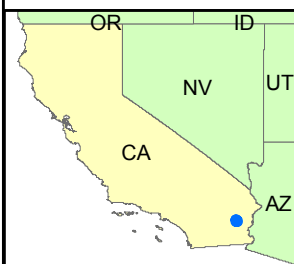




Project: 12944-002
Date: August 2009



Project Location



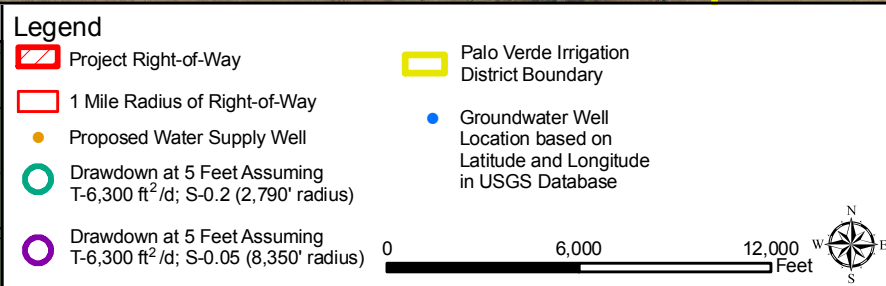
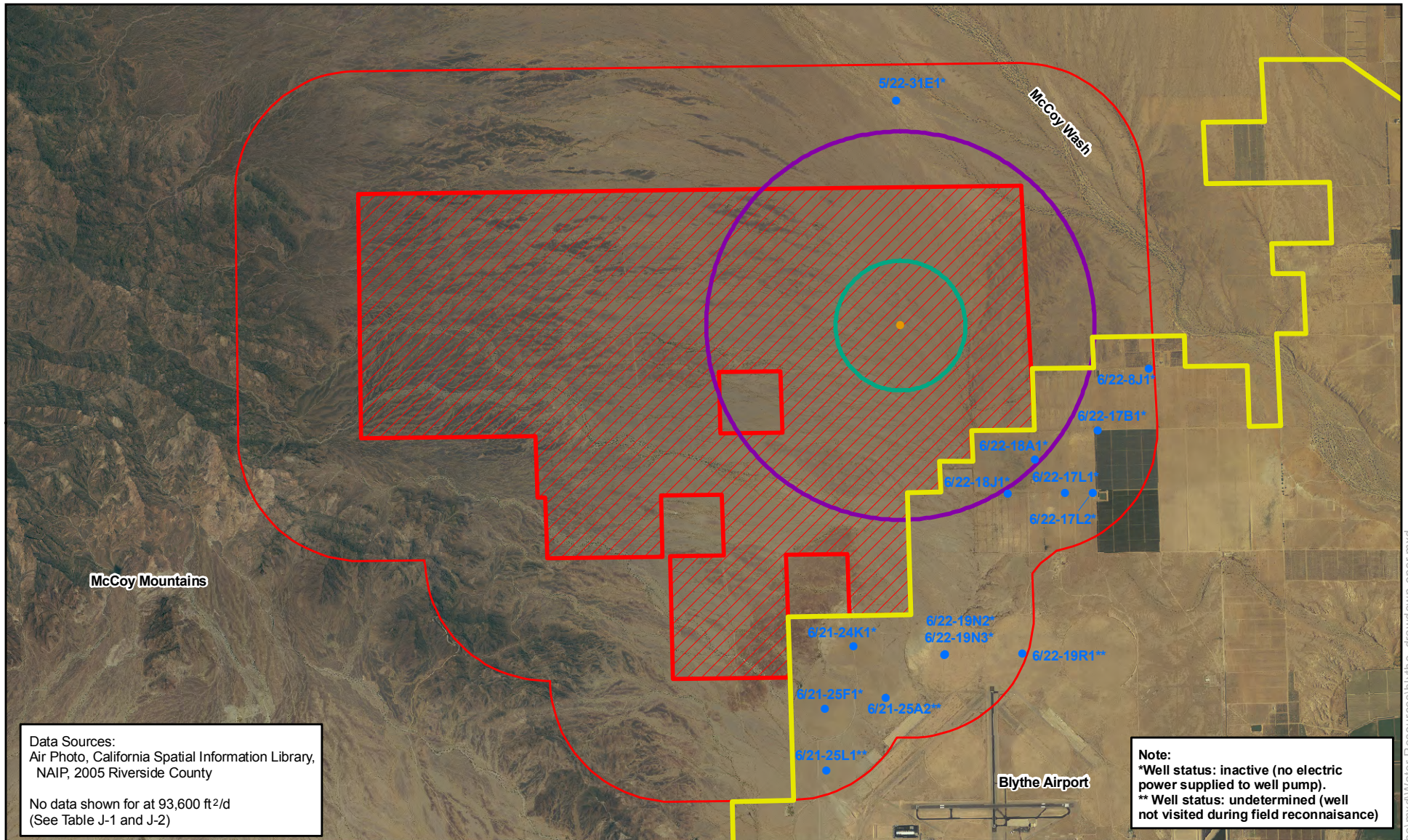
Blythe Solar Power Project

**Figure 5.17-18
Water Balance**




AECOM


Project: 12944-002
Date: August 2009



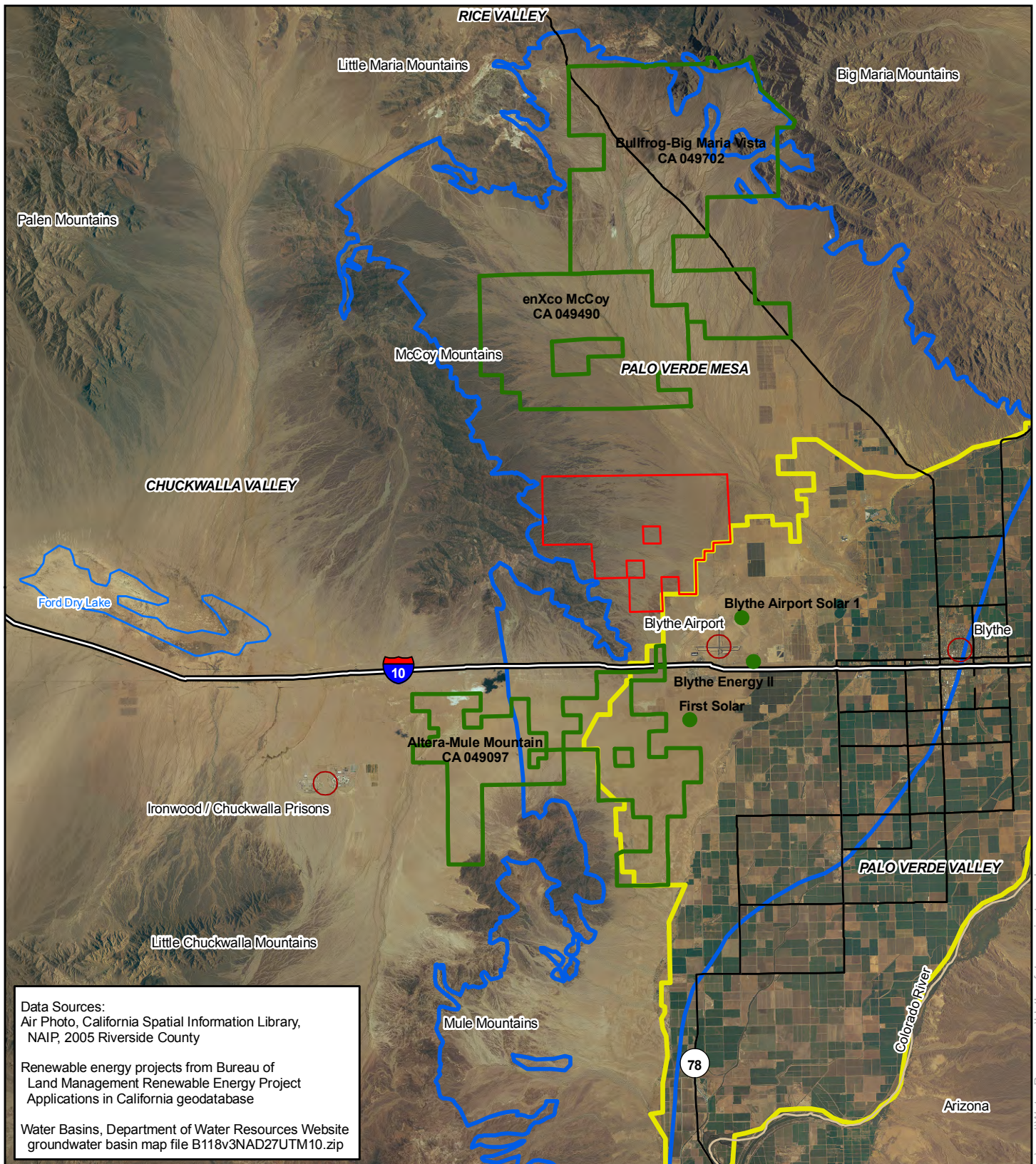
Blythe Solar Power Project

Figure 5.17-19
Predicted Drawdown During
Operation Period
(Storage Coefficient of 0.05
and 0.20)





Project: 12944-002
Date: August 2009



Data Sources:
 Air Photo, California Spatial Information Library,
 NAIP, 2005 Riverside County

Renewable energy projects from Bureau of
 Land Management Renewable Energy Project
 Applications in California geodatabase

Water Basins, Department of Water Resources Website
 groundwater basin map file B118v3NAD27UTM10.zip

<p>Map Location</p>	<p>Legend</p> <ul style="list-style-type: none"> ● Proposed Renewable Energy Project Sites ▭ Project Right-of-Way ○ Geographic/Cultural Area of Interest ▬ Freeway ▭ Palo Verde Mesa Groundwater Basin Boundary ▭ Palo Verde Irrigation District Boundary <p>0 4 8 Miles</p>	<p>Blythe Solar Power Project</p> <p>Figure 5.17-20 Cumulative Impact Assessment - Renewable Projects in the Palo Verde Mesa Basin</p>	<p>Solar Millennium</p> <p>AECOM</p> <p>Project: 12944-002 Date: August 2009</p>
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